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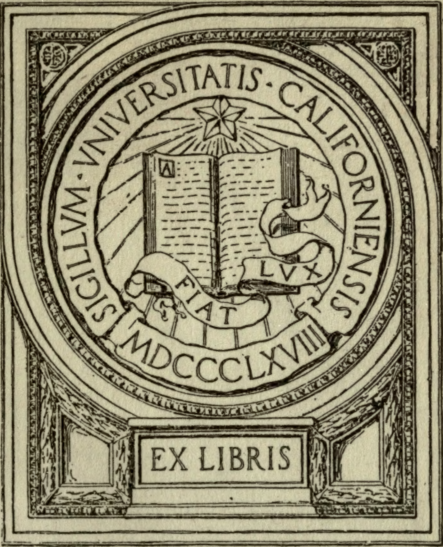
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A MANUAL OF THE GAME BIRDS OF INDIA.

A MANUAL

OF THE

GAME BIRDS OF INDIA.

Part II.—Water Birds.

BY

EUGENE W. OATES,

Author of
"A Handbook to the Birds of British Burmah;"
Vols. I. and II. of "The Fauna of British India: Birds;"
Editor of the Second Edition of Hume's
"Nests and Eggs of Indian Birds."

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PREFACE.

In this part of my Manual I have attempted to deal with the species of Ducks and Snipes which occur within the limits of the Indian Empire, forty-four in number.

The Game Birds which are now known with certainty to occur in India number altogether one hundred and thirty-four species, of which two have been discovered since the issue of the first part of this Manual and are now brought to notice in an Appendix to this volume.

The treatment of the Ducks has entailed an amount of original investigation which I little contemplated when I first proposed to write about them, and the issue of this

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Part has, in consequence, been somewhat delayed. My thanks are due to my friend Mr. W. P. Pycraft for much kind assistance.

EUGENE W. OATES.

1, CARLTON GARDENS, EALING,
LONDON.

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ERRATA.

At page 40, line 12, *for* "This latter" *read* "The Pink-footed Goose."

At page 121, line 16, *for* "Teal" *read* "Duck."

A MANUAL

OF THE

GAME BIRDS OF INDIA.

Part II.—Water Birds.

INTRODUCTION.

THE birds which form the subject of this, the second, part of the GAME BIRDS OF INDIA, are forty-four in number, and are referable to two sections or orders, containing the following number of species :—

Water Fowl . .	37	species.
Snipes . . .	7	"

It is hardly necessary to point out to the sportsman how these two sections of birds differ from each other, and from all the game birds treated of in the first part of this work; nevertheless it will be convenient to assign to them certain characters, in order that the sections may be properly defined :—

WATER FOWL (p. 13).—The front toes joined together by a web; the hind toe lobed; the margins of the bill furnished with lamellæ, or serrations, or saw-like teeth.

SNIPES (p. 424).—Bill long and slender, straight, or curved at the tip; the nasal furrow extending nearly to the tip of the upper mandible; no trace of web between the toes; hind toe small and elevated above the level of the front toes; the tarsus equal to or shorter than the middle toe and claw.

Of the forty-four species of Water Birds included in my list, thirty-six are to be found in Dr. Jerdon's work and forty-three in that of Messrs. Hume and Marshall. I have been able to add one species, the Eastern White-eyed Pochard, to the Indian list. The occurrence of this Duck in India has been brought to notice by Mr. F. Finn, and no doubt it will prove to be a common bird in the eastern portion of the Empire, where it has hitherto been confounded with the better-known western form.

I have omitted from my list three

species of Water Fowl which I am of opinion were included in their work by Messrs. Hume and Marshall on quite insufficient evidence. These are the Whooper or Hooper Swan, Bewick's Swan, and the Bean-Goose.

In this Manual I have indicated many species of Water Birds, both Ducks and Snipes, which may not improbably be found hereafter to occur within the limits of the Indian Empire. To these I have assigned characters by means of which they can be easily identified, and I trust that sportsmen in India may be able, in the course of a few years, to add at least half a dozen species to the present list.

The Geese of the Bean-Goose type are especially interesting, and the species which occur in Eastern Asia may reasonably be expected to visit Upper Burma and the Shan States in the winter. In the course of studying the Geese in the British Museum, I found a Goose of this type from Japan which could not be assigned to any known species, and I have accordingly described it in my summary of these birds, (p. 77), under the name of *Anser mentalis.*

In dealing with the Water Fowl, I have

largely availed myself of the Catalogue of the Ducks by Count Salvadori, forming the twenty-seventh volume of the British Museum Catalogue of Birds. I have in a few instances ventured to differ from this eminent authority. I have, for instance, placed the Pink-headed Duck near the Pochards, and I have placed the Grey Ducks in a separate genus or group, for reasons which are fully given in their proper place.

In dealing with the Snipes, I have profited by Dr. Bowdler Sharpe's Catalogue of the Waders in the British Museum Collection (vol. xxiv.).

The birds treated of in this second part of my Manual are of such wide distribution that the literature relating to them is very extensive. So many of the Ducks and Geese visit India only in the winter that we have to go to European authors for an account of their nesting and general habits in summer. The books to which I am chiefly indebted for information, and from which I have frequently quoted largely, are Dr. Sharpe's "British Birds" in Allen's "Naturalist's Library"; Mr. Dresser's splendid work "The Birds of Europe"; and the late Mr. Seebohm's "British Birds." In addition to these I have often had occasion to quote from various charming books of sport, too numerous to be mentioned here, but which are duly acknowledged in the following pages.

Since the first part of this work was published, Dr. Blanford has issued the fourth and concluding volume of the Birds in the "Fauna of British India." This treats not only of the Game Birds, but of many other birds which are of special interest to the sportsman, but which do not enter into the scope of this smaller and more restricted Manual. The sportsman who wishes to do more than merely identify the species he meets with will do well to study Dr. Blanford's volume and acquaint himself with the many interesting details of the anatomy and classification of the Indian Game Birds which would be out of place in this Manual.

My obligations to Messrs. Hume and Marshall cannot be overestimated. Their descriptions of the habits of the Water Birds, so far as these, in the case of so many of the Ducks and Snipes, can be observed in India, are so complete that little can be added to them. I have laid their work largely under contribution.

I cannot omit to notice here Colonel le Messurier's useful little volume on "The Game, Shore, and Water Birds of India," and Mr. E. C. Stuart Baker's series of most interesting articles on the "Ducks of India" now appearing in the Journal of the Bombay Natural History Society. These articles, written by such a practical naturalist and sportsman as Mr. Baker, are most valuable, and they have been of great use to me. I may also mention that Mr. F. Finn is dealing with the Indian Ducks in the "Asian" newspaper.

I now append a table, similar to the one in the first part of this Manual, in which are shown in parallel columns the names used by me in this volume for the Water Birds, the corresponding names used by Dr. Jerdon, and similarly the corresponding names used by Messrs. Hume and Marshall, with a reference to the volume and page where these names may be found.*

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* In order that it may not be overlooked, I wish to draw my readers' attention to a new Pheasant described in the Appendix at the end of this volume.

NAMES USED IN THIS WORK.	NAMES USED BY DR. JERDON IN THE "BIRDS OF INDIA," VOL. II.	NAMES USED BY MESSRS. HUME AND MARSHALL IN THE "GAME BIRDS OF INDIA," VOL. III.
89. The Mute Swan, p. 26.	——	The Mute Swan, p. 41.
90. The Grey Lag-Goose, p. 42	The Grey Goose, p. 779.	The Grey Lag Goose, p. 55.
91. The Large White-fronted Goose, p. 48.	The White-fronted Goose, p. 780.	The White-fronted or Laughing Goose, p. 73.
92. The Small White-fronted Goose, p. 53.	The Dwarf Goose, p. 781.	The Dwarf Goose, p. 77.
93. The Barred-headed Goose, p. 59.	The Barred-headed Goose, p. 782.	The Barred-headed Goose, p. 81.
94. The Pink-footed Goose, p. 65.	The Pink-footed Goose, p. 780.	The Pink-footed Goose, p. 71.
95. The Common Sheld-Duck, p. 81.	The Shieldrake, p. 794.	The Shelldrake or Burrow Duck, p. 135.
96. The Ruddy Sheld-Duck, p. 92.	The Ruddy Shieldrake, p. 791.	The Ruddy Shelldrake or Brahminy Duck, p. 122.
97. The Comb-Duck, p. 103.	The Black-backed Goose, p. 785.	The Nukhta or Comb Duck, p. 91.
98. The Small Whistling Duck, p. 112.	The Whistling-Teal, p. 789.	The Whistling Teal, p. 110.
99. The Large Whistling Duck, p. 120.	The Large Whistling-Teal, p. 790.	The Larger Whistling Teal, p. 119.

NAMES USED IN THIS WORK.	NAMES USED BY DR. JERDON IN THE "BIRDS OF INDIA," VOL. II.	NAMES USED BY MESSRS. HUME AND MARSHALL IN THE "GAME BIRDS OF INDIA," VOL. III.
100. The Indian Cotton-Teal, p. 127.	The White-bodied Goose-Teal, p. 786.	The Cotton Teal, p. 101.
101. The Indian Wood-Duck p. 139.	The White-winged Shieldrake, p. 793.	The White-winged Wood-Duck, p. 147.
102. The Grey Duck, p. 150.	The Spotted-billed Duck, p. 799.	The Grey or Spot-bill Duck, p. 165.
103. The Andaman Duck, p. 158.	——	The Oceanic Teal, p. 243.
104. The Common Teal, p. 172.	The Common Teal, p. 806.	The Common Teal, p. 205.
105. The Baikal Teal, p. 182.	The Clucking Teal, p. 808.	The Clucking or Baikal Teal, p. 225.
106. The Garganey, p. 190.	The Blue-winged Teal, p. 807.	The Garganey or Blue-winged Teal, p. 215.
107. The Falcated Duck, p. 202.	——	The Crested or Bronze-capped Teal, p. 231.
108. The Wigeon, p. 210.	The Wigeon, p. 804.	The Wigeon, p. 197.
109. The Pintail, p 223.	The Pintail Duck, p. 803.	The Pintail, p. 189.
110. The Gadwall, p. 234.	The Gadwall, p. 802.	The Gadwall, p. 181.
111. The Shoveller, p. 246.	The Shoveller, p. 796.	The Shoveller, p. 141.

NAMES USED IN THIS WORK.	NAMES USED BY DR. JERDON IN THE "BIRDS OF INDIA," VOL. II.	NAMES USED BY MESSRS. HUME AND MARSHALL IN THE "GAME BIRDS OF INDIA," VOL. III.
112. The Wild Duck, p. 257.	The Mallard, p. 798.	The Mallard, p. 151.
113. The Marbled Duck, p. 273.	——	The Marbled Teal, p. 237.
114. The Pink-headed Duck, p. 284.	The Pink-headed Duck, p. 800.	The Pink-headed Duck, p. 173.
115. The Red-crested Pochard, p. 299.	The Red-crested Pochard, p. 811.	The Red-crested Pochard, p. 253.
116. The Pochard, p. 309.	The Red-headed Pochard, p. 812.	The Pochard or Dun-bird, p. 247.
117. The Western White-eyed Pochard, p. 318.	The White-eyed Duck, p. 813.	The White-eyed Pochard, p. 263.
118. The Eastern White-eyed Pochard, p. 328.	——	——
119. The Scaup Duck, p. 337.	The Scaup Pochard, p. 814.	The Scaup, p. 271.
120. The Tufted Scaup Duck, p. 348.	The Tufted Duck, p. 815.	The Tufted Pochard, p. 277.
121. The Golden-eye, p. 358.	——	The Golden-Eye or Garrot, p. 285.
122. The Stiff-tailed Duck, p. 375.	——	The White-faced Stiff-tail Duck, p. 289.

NAMES USED IN THIS WORK.	NAMES USED BY DR. JERDON IN THE "BIRDS OF INDIA," VOL. II.	NAMES USED BY MESSRS. HUME AND MARSHALL IN THE "GAME BIRDS OF INDIA," VOL. III.
123. The Goosander, p. 390.	The Merganser, p. 817.	The Goosander or Merganser, p. 299.
124. The Red-breasted Merganser, p. 402.	——	The Red-breasted Merganser, p. 305.
125. The Smew, p. 413.	The Smew, p. 818.	The Smew, p. 293.
126. The Wood-Cock, p. 428.	The Wood-Cock, p. 670.	The Woodcock, p. 309.
127. The Wood-Snipe, p. 439.	The Wood Snipe, p. 672.	The Wood-Snipe, p. 325.
128. The Solitary Snipe, p. 446.	The Himalayan Solitary Snipe, p. 673.	The Eastern Solitary Snipe, p. 334.
129. The Common Snipe, p. 455.	The Common Snipe, p. 674.	The Common or Fantail Snipe, p. 359.
130. The Pintail Snipe, p. 468.	The Pin-tailed Snipe, p. 674.	The Pintail Snipe, p. 339.
131. The Jack-Snipe, p. 477.	The Jack Snipe, p. 676.	The Jack Snipe, p. 373.
132. The Painted Snipe, p. 488.	The Painted Snipe, p. 677.	The Painted Snipe, p. 381.

In the first part of this Manual I tried to avoid the use of what might be styled technical terms. In writing of the Water Birds I have been compelled, for the sake of clearness and brevity, to make use of a few such terms. These are, however, so often employed by Messrs. Hume and Marshall and other writers on birds that few sportsmen can plead ignorance of their meaning; but to avoid any possible misunderstanding on this point it will, perhaps, be desirable to explain them briefly. The "primaries" are the first ten or eleven quills of the wing, counting from the tip inwards. Many birds have ten primaries, but the Ducks have eleven. The first, however, is so minute and so difficult to discover that it may be ignored; and for all practical purposes Ducks may be considered to have ten primaries only, all of full size. The "secondaries" are the remaining quills of the wing. About half of these are usually short and of much the same length, and are termed the outer secondaries. The remaining secondaries are usually long and pointed, and are termed the inner secondaries.

The "speculum," a term used in connection with Ducks, is the colour exhibited by the outer secondaries. It is often very brilliant and metallic; sometimes dull or of a brownish colour; at times pure white or grey.

The "scapulars" are the feathers

springing from the shoulder, generally very long, pointed, and of a distinctive colour. When the wing is closed, the scapulars completely cover the junction of the wing with the body, and lie partly over the feathers of the back and partly over the inner secondaries.

The "axillaries" are a bunch of long narrow feathers, springing from the armpit, or the junction of the wing with the body. They lie concealed under the closed wing.

The "coverts" of the upper surface of the wing are divided into three series: the lesser, which ranges along the margin of the wing; the middle; and the lower series, or greater coverts, covering the base of the quills. The primary coverts are those small, stiff, pointed feathers which lie at the base of the primaries, and are not only quite distinct from the greater coverts, but are generally of quite a different colour, most usually black or brown. The coverts of the lower surface of the wing are almost invariably of one pattern of colour, and for purposes of description do not require to be divided into series.

I again remind my readers that all the measurements in this Manual are in inches.

THE WATER FOWL.

The Water-Fowl comprise the Swans, the Geese, and the Ducks.

The Swans are perhaps best separated by reason of their long necks and bare cheeks, but there is no line of demarcation between the Geese and the Ducks. The typical Goose and the typical Duck of our farmyards are sufficiently distinct, it is true; but when treating of a large number of species of Water Fowl, we find a perfect chain of links between the Geese and Ducks, just as in treating of the Gallinaceous Birds we found the Pheasant and the Partridge linked together by numerous groups possessing some of the characters of both species.

I have, therefore, not attempted to divide the Water Fowl into three large sections—Swans, Geese, and Ducks—but have preferred to form these birds into small natural groups, to which I have assigned names which are partly sanctioned by usage and partly suggested by considerations of structure, habits, and plumage.

The Water Fowl do not vary in form to such an extent as the Gallinaceous Birds, and it is consequently much more difficult in the case of the former to discover characters by which they may be grouped together or separated from each other. The primary character of importance among the Water Fowl is undoubtedly the pattern of colour presented by the primaries.

All adult Swans have the primaries pure white. I am aware that the South American *Coscoroba candida*, is by many authors looked upon as a Swan, and that it has the primaries white tipped with black; but I believe that this bird is not a Swan, but a Goose. The neck is very short, the cheeks are feathered, and it bears little resemblance to a Swan in form or external structure.

The True Geese have a pattern of the primaries all their own. The outer primaries are grey tipped with blackish; the inner are uniformly black or blackish.

All the resident Ducks, and those Ducks the migrations of which are very limited or partial, have the primaries uniform, without a pattern: black or dark brown in the case of the Sheld-Ducks, the Comb-Ducks, the Whistling Ducks, the Wood-Ducks and the Grey Ducks; and grey or brown in the case of the Marbled and Stiff-tailed Ducks.

All the highly-migratory and rapid-flying Ducks have the primaries with the outer web of a very dark colour, and the inner web of a drab colour with a dark tip. The Ducks which have the primaries of this peculiar pattern are the True Ducks, the Golden-eyes, and the Mergansers.

Another pattern is presented by the Pink-headed Ducks and the Pochards. These have the outer primaries similar to those of the True Ducks, above described; but the inner primaries are of the same white or pale colour as the speculum, but tipped with dusky.

The Scaup Ducks have the primaries very similar to those of the Pink-headed Ducks and Pochards, but the inner primaries, instead of being white or of a pale colour on both webs, have only the outer web white or of a pale colour, the inner web being dark.

The Cotton-Teal is one of the very few Ducks, in fact the only Indian one, in which the pattern of the primaries varies in the two sexes. It is in other ways a very anomalous Duck, one remarkable feature of its economy being that it has both a spring and an autumn moult.

It will be seen how important this pattern of the primaries is in determining Water Fowl. I have not restricted my examination of the colour-pattern of the primaries to the Indian Ducks alone. I have examined a large number of species of Ducks from all parts of the world, and it seems to me a character of the first importance for the classification and grouping of the Water Fowl.

The colour of the axillaries and of the speculum are also characters of much use in discriminating the Ducks. The shape and size of the bill, the shape of the tail and the number of feathers of which it is composed, the extent to which the hindtoe is lobed, and the size of the feet, are characters liable to great variation, and little reliance can be placed on them. They are generally of little use, and I have seldom referred to them.

The resident Ducks, and a few others which have nearly abandoned the migratory instinct, such as the Sheld-Ducks, have the usual autumn change and no other. The Cotton-Teal, but probably only the male of this, has two moults a year, as before remarked. The True Ducks, the Diving Ducks, the Golden-eyes and the Mergansers differ from all the above mentioned in respect to the way the moult is accomplished. The females have only the one autumn moult, but the males pass through a lengthened operation lasting probably four months. As soon as the female has commenced incubation, the drakes retire and flock together in the quietest spots they can find. They there commence a moult of the feathers of the head, neck, and body, and emerge from this operation in a plumage which very closely resembles that of the female. As soon as this has been accomplished, the drakes moult their quills. They then cast the plumage of the head, neck, and body again, and resume their ordinary brilliant male plumage. Drakes in the plumage of the female, or in post-nuptial plumage as I have termed it in the following pages, are very seldom seen or shot, and consequently specimens are very rare in museums. There is much doubt, even at the present time, regarding the post-nuptial plumage of the drakes of some of the commoner European species.

Young Ducks change from the downy stage into the plumage of the adult female. The males, almost immediately after this, commence to assume the plumage of the drake, and resemble him closely by the end of the first winter ; but they do not acquire the mature, brilliant plumage of the perfectly adult drake till about the end of the third year.

I now append a synopsis of the sixteen groups of Water Fowl found in India. As in the case of the other Game birds, the characters given apply to both sexes, and also to the young bird, after the change from down to feather.

SYNOPSIS OF THE GROUPS OF WATER FOWL TREATED OF IN THIS WORK.

SWANS.—Primaries white in adults, pale brown in young birds; the neck as long as, or longer than, the body; the skin in front of the eye bare of feathers, except in very young birds; the inner secondaries reaching to the tip of the longest primary; the tarsus much shorter than the middle toe. Of wide distribution. P. 24.

TRUE GEESE.—Varying in size up to that of a domestic Goose; the outer primaries grey tipped with blackish, the inner primaries and the outer secondaries uniformly blackish; all with white shafts; the upper tail-coverts white; the axillaries bluish grey or ashy. Of wide distribution. P. 38.

SHELD-DUCKS.—About the size of a small Goose; primaries uniformly black; axillaries white; wing-coverts white; speculum green or bronze; the outer web of the secondaries next the inner side of the speculum, chestnut. Of wide distribution. P. 79.

COMB-DUCKS.—About the size of a small Goose; primaries uniformly black; axillaries black; head and neck white, spotted with black. Of wide distribution. P. 101.

WHISTLING DUCKS.—About the size of a small Duck; primaries, axillaries, and under wing-coverts uniformly black; feathers of the back broadly margined with rufous. Of wide distribution. P. 110.

COTTON-TEAL.—Much smaller than a Common Teal; primaries uniform brown, with or without a large white patch; axillaries black, or else brown margined with grey; nearly all the secondaries broadly tipped with white. Of wide distribution. P. 125.

WOOD-DUCKS.—About the size of a small Goose; primaries uniformly black; axillaries white; upper wing-coverts white, with a broad black band separating them from the slaty-blue speculum. The eastern part of the Empire. P. 136.

GREY DUCKS.—Varying in size from that of a common Teal to that of a domestic Duck; primaries uniformly black, or with the inner web of a slightly paler black than the outer; axillaries white; under tail-coverts never plain white nor barred across; in the closed wing, the first secondary reaching to about the tip of the longest primary coverts. Confined to the Indian Empire. P. 147.

TRUE DUCKS.—Varying in size from that of a common Teal to that of a domestic Duck; the outer web of the primaries blackish, the inner web drab, with a blackish tip; axillaries white, or white mottled with brown; under tail-coverts never plain white nor barred across; in the closed wing, the first secondary falling short of the tip of the longest primary coverts by more than half an inch. Of wide distribution. P. 168.

MARBLED DUCKS.—Rather larger than a common Teal; primaries grey on both webs, with dusky tips, the first five or six with a silver-grey tinge on the outer web; axillaries white, barred with brown near the tips; upper plumage marked with large, roundish, pale buff spots; under tail-coverts barred across. Of wide distribution. P. 272.

PINK-HEADED DUCKS.—About the size

of a domestic Duck; outer primaries with the outer web much darker than the inner; inner primaries with both webs of the same pale vinous drab as the speculum, and all tipped with dusky; axillaries brown, mottled with white; the whole lower plumage, together with the sides of the body, of one uniform dark colour. Confined to the Empire. P. 282.

POCHARDS.—Varying in size from that of a small Wigeon to that of a domestic Duck; outer primaries with the outer web much darker than the inner; inner primaries with both webs of the same white or grey colour as the speculum, and all tipped with dusky; axillaries white, or white mottled with brown at the tip; the lower plumage and the sides of the body never of one uniform colour throughout. Of wide distribution. P. 296.

SCAUP DUCKS.—About the size of a Wigeon; outer primaries with the outer web much darker than the inner; inner primaries with the outer web white or much paler than the inner, and all tipped with dusky; axillaries white, or white mottled with brown at the tips. Of wide distribution. P. 334.

GOLDEN-EYES.—About the size of a

Wigeon; the outer web of the primaries blackish, the inner web drab, with a blackish tip; axillaries uniformly blackish or brown; the middle secondaries entirely white. Of wide distribution. P. 357.

STIFF-TAILED DUCKS.—Rather larger than a common Teal; primaries uniform drab brown, with darker tips; axillaries white; under tail-coverts cross-barred; base of the upper mandible much swollen; tail composed of narrow, stiff feathers, projecting fully three inches beyond the coverts. Of wide distribution. P. 373.

MERGANSERS.—Varying in size from that of a common Teal to that of a domestic Duck; the outer web of the primaries blackish, the inner web drab, with a blackish tip; axillaries white; under tail-coverts plain white; margins of the bill furnished with close-set saw-like teeth. Of wide distribution. P. 386.

THE SWANS.

The Swans are the largest of the Water Fowl, and adults of those species which inhabit the northern hemisphere can be recognised at a glance by their pure white plumage and long necks. They differ from both the Geese and Ducks in having the space in front of the eyes quite bare of feathers, and from the former also by their short tarsus, which is never so long as the middle toe.

Young Swans, on changing from the downy stage, have a plumage which is uniformly brown, but white feathers make their appearance almost at once, and by the time they are about fifteen months of age the whole plumage is white. Swans shot in India are for the most part immature, the plumage consisting of a mixture of white and brown feathers. In very young birds the skin in front of the eyes is covered by some stiff bristle-like feathers, but these are soon lost.

Swans moult once a year, in the autumn, and the sexes are alike.

Swans swim very gracefully, often with partially opened wings, and they fly well. They walk clumsily, and seldom leave the water, except to rest on the bank.

Both the Whooper and Bewick's Swan are included by Messrs. Hume and Marshall among the game birds of India, but on very insufficient evidence. An illustration of a Swan which was killed in Nepal is among the paintings of Nepalese birds made by Hodgson, and now deposited in the library of the Zoological Society of London. The feet and the skull of, probably, the same bird are to be seen in the British Museum. There has been considerable difference of opinion regarding the species of Swan which these relics and the drawing refer to. The latter is on a very small scale, but the colouring of the head, in my opinion, represents a young Whooper. It is difficult to identify the skull, but the feet are small enough for a Bewick's Swan. On the whole, I am inclined to think that Hodgson procured a young Whooper, but the matter is so uncertain that it is better to wait for further evidence before admitting either of the above species to the list of the birds of India.

89. THE MUTE SWAN.

Cygnus olor, (GMELIN).

Primaries wholly white or pale brown.
Neck as long as, or longer than, the body.
Skin in front of the eye bare of feathers, except in very young birds.
Tarsus much shorter than the middle toe.
Upper mandible orange-yellow, except the knob at base, the nail, the nostrils, and the skin between the base of the bill and the eye, which are black.

Sexes alike.

VERNACULAR NAME :—*Penr*, Punjab.

THE occurrence of the Mute Swan in India has been noted on many occasions, and this bird appears to be a somewhat regular visitor, in small numbers, to the north-west part of the Empire. It has been procured in the Peshawar and Hazara districts of the Punjab, and near Sehwan in Sind, in the cold weather. Stoliczka stated, many years ago, that he observed Swans, probably of this species, in the Runn of Cutch. Major Waterfield shot this species near Peshawar on the 3rd of June, and Mr. D. B. Sinclair shot a specimen on the 1st of June and observed another on the 7th of July. This Swan thus appears to visit India regardless of season, or it may, not improbably, be a resident in certain favourable localities.

The Mute Swan is a bird of temperate climates, and does not go to the far north. In fact, I cannot discover that it has ever been observed north of the 60th degree of north latitude. Laterally, the range of this Swan extends from Western Europe to Eastern Siberia. In winter it visits Northern Africa, Asia Minor, Persia, and, as we know, North-Western India. It breeds in portions of Central Europe, on the shores of the Caspian Sea, in Turkestan, and in Mongolia.

The Mute Swan appears to be a resident species in the central portion of its range, and to be migratory only in the northern and southern portions. It is the Swan which is most commonly kept in confinement throughout Europe, and it seems to be able to live in all climates.

As a rule, the Mute Swan is found on

inland pieces of water or slow-flowing rivers, where there is a good deal of vegetation on the banks. In the winter it may be seen on the sea-shore, at the mouth of some river, or in some quiet bay, and it seldom goes far from the shore. It lives, and also migrates, in flocks or small parties, and is particularly shy. It flies like a Goose or a Duck, with the neck stretched out at full length; and the noise made by its wings, when flying, is very loud, and can be heard for a long distance.

The Mute Swan is not entirely a silent bird. When angry it hisses like a Goose, and at the pairing season it is said to have a soft, low voice, not at all unmusical. At times it is also said to have a trumpet-like call, like that of a Crane.

The Mute Swan, like others of its tribe, feeds chiefly on vegetable matter growing in the water, and also on insects, snails, and worms. It never dives, but it submerges the front half of its body when searching with its bill for food at the bottom of ponds, etc.

I shall now proceed to quote Mr. Stevenson, who in his "Birds of Norfolk" gives us a very full and interesting account of the habits and the breeding of the Mute Swan in a state of domestication. He says:—"The old Swans usually commence their nests in March, but in cold backward seasons are a week or two later, and for a fortnight or three weeks before the eggs are laid may be seen busily pulling and carrying the stuff. I cannot ascertain, however, that the hen birds, as stated by Mr. Boyes, of Beverley, in a recent letter to Mr. J. H. Gurney, junr., ever lay their first eggs on the ground, except in cases where the nest has been destroyed or the birds driven from their first site just as the female was ready to lay. The foundation of the nest is, in most cases, composed of dried fodder from the 'rands,' provided for their use, but supplemented by reeds, rushes, and other coarse herbage of their own collecting, and added to more or less throughout the time of incubation. The interior is composed of somewhat finer materials, mixed with their own down and feathers. Though generally high enough to escape the effects of any ordinary flood, they have been known to raise them suddenly, —either collecting materials of their own accord, or using such as the forethought of the marshmen may have supplied,—

and thus, by a marvellous instinct, as in the case recorded by Yarrell, anticipate an extraordinarily high tide. At such times both birds are employed in the work, the male collecting materials and its mate arranging them and shifting her eggs. The process, as observed by Rich on more than one occasion, appears to be as follows:—The fresh stuff is piled up on one side of the nest, and having been roughly laid with the bill, is flattened down with the crown of the head; the eggs are then carefully rolled on to the higher surface by means of the head and beak, the under part of the lower mandible being inserted under each, and the same course is then adopted on the other side; and lastly, having raised the centre in proportion, the eggs are returned to their proper position. The eggs are not, however, exposed during all this time, but are covered at intervals by the female to keep them warm, and this even when the waters are rising rapidly.

"The Swan's nest, from its ample dimensions, is always a conspicuous object, whether placed amongst the rank herbage on the river's bank, at the mouth of a marsh drain, or on the little islands and reedy margins of the broads themselves;

and from the summit of that littered mass the sitting bird commands all approaches, whilst her mate keeps guard below. To my mind an old male Swan never looks more beautiful than when, thus 'on duty,' he sails forth from the margin of the stream to meet intruders; with his head and neck thrown back between his snowy pinions, and every feather quivering with excitement, he drives through the rippling water, contenting himself, if unmolested, with a quiet assertion of his rights, but with loud hisses and threatening actions resenting an attack. When the young, too, under the joint convoy of their parents, have taken to the water, the action of both birds is full of grace and vigour, and the deep call-notes of the old pair mingle with the soft whistlings of their downy nestlings. What prettier sight presents itself upon our inland waters than such a group disporting themselves in the bright sunshine of a summer's day, when the pure whiteness of the old birds' feathers contrasts with the green background of reeds and rushes, and the little grey cygnets on their mother's back are peeping with bright bead-like eyes from the shelter of her spotless plumes?

This habit of taking the young on her back is not, as some have supposed, adopted only as a means of safety when crossing a strong current, but is a method of brooding her young on the water, very commonly practised by the female Swan whilst her cygnets are young, and she will sink herself low in the water that they may mount more easily. Whether at the same time she gives them a 'leg-up' by raising them on the broad webs of her own feet, I cannot say positively; but this is not improbable, since a favourite action in Swans is that of swimming with one foot resting upon the lower part of the back, the sole of the foot being uppermost. . . . Swans pair for life, build a fresh nest each season, and, if left unmolested, will keep pretty close to the same locality. . . . Young hen birds do not lay till their second year, some not until the third or fourth, and commence by laying from three to five eggs. . . . Commencing with five eggs, the same bird will lay from seven to nine the next season, and in the following year from ten to eleven, being then at her prime at four years old. . . . Incubation usually occupies five weeks, or about a week longer should the weather be very cold; but if the eggs prove addled, the hen will continue sitting for seven or eight weeks, or till driven from her nest by the marshmen. . . . Whilst the female is laying her full complement of eggs—which she does at the rate of about ten eggs in fourteen days—the cock takes charge of and broods them in her absence, often most reluctantly resigning his post on her return."

Except that the wild Swan nests later than the tame bird, the breeding habits of the former do not seem to vary from those of the latter. The number of eggs laid varies from five to eight. In shape, the eggs are rather pointed at both ends; the shell is rather rough, but has a fair amount of gloss. They differ from the eggs of the Whooper and Bewick's Swan in being of a greenish grey colour. They measure about 4·6 in length and about 2·95 in breadth.

The adult bird has the whole plumage pure white. Young birds are pale brown. They complete the change into pure white plumage when they are about fifteen months old.

The bill measures about 4·2 from the forehead to the tip of the nail of the upper mandible, but the edge of the forehead is not always clearly defined; from the eye to the tip of the nail about 4·7; from the gape to the tip of the nail about 3·8. The wing measures about 23. The tail is between 9 and 10 in length, and much pointed, the distance between the tip of the outermost feather and the tip of the middle pair of feathers being nearly 4. The tarsus is about 3·8 and the middle toe, with claw, about 6.

The adult male has a knob at the base of the upper mandible. The adult female has a similar, but smaller, one. Young birds have no indication of a knob.

Adult birds have the bill orange-red, except the knob, the skin between the eye and the bill, an elongated patch on the nostril, the nail and margins of both mandibles, and the base of the lower mandible, which are black; the irides are brown; legs and feet black.

In young birds, the orange colour of the bill is replaced by fleshy grey or pale buff, which frequently turns to a blackish colour in dry skins.

The total length of an adult bird is about five feet. The weight of Indian-killed birds has varied from 13 to 19 lb.; but tame birds in Europe are said to reach a weight of 30 lb.

I now give a brief, but sufficient, description of the Whooper and Bewick's Swan. Both these Swans have the bare skin in front of the eye yellow, and they ought not to be confounded with the Mute Swan, in which this part is black.

THE WHOOPER (*Cygnus musicus*), when adult, is entirely white. The bill is partly yellow and partly black. If a point be taken on the bill about an inch from the forehead, and another on the margin of the upper mandible about half-way between the gape and the tip, and these two points be joined by a line which will be found to pass through the posterior angle of the nostril, then this line will represent the junction of the yellow of the base of the bill and the black of the front half. The length of the upper mandible from the forehead to the tip is about 4·1; from the eye to the tip, about 5·2; and from the gape to the tip, about 4·1. There is no knob or swelling at the base of the upper mandible. The wing measures from 23 to 25½; the tarsus about 4·3; and the middle toe and claw about 6·7. The tail is rounded, the distance between the tip of the outermost feather and the tip of the middle pair of feathers being about two inches.

The young bird is of a pale brown colour; but white feathers soon begin to show themselves. According to Count Salvadori, the bill is first of a dull flesh-colour, the tip and the lateral margins black; later, black with a reddish orange band across the nostrils, and with the base pale greenish white.

BEWICK'S SWAN (*Cygnus bewicki*), when adult is entirely white. The bill is partly yellow and partly black, but the two colours are not distributed in quite the same manner as in the Whooper. The yellow is of much smaller extent, and is confined to a patch on either side of the base of the upper mandible, reaching back to the eye, but failing to reach the nostrils. The two patches sometimes meet on the ridge of the mandible, and that part is often yellow, or mixed yellow and black, for a distance of about three-quarters of an inch from the forehead. The length of the upper mandible, from the forehead to the tip is about 3·7; from the eye to the tip, about 4·3; and from the gape to the tip, about 3·6. There is no knob or swelling at the base of the upper mandible. The wing measures about 21; the tarsus about 4; and the middle toe and claw, about 5·8. The tail is rounded, the distance between the tip of the outermost feather and the tip of the middle pair of feathers being less than two inches.

The young bird is pale brown, and it becomes white in the second autumn. Intermediate specimens have a mixture of white and brown feathers. The base of the bill is paler yellow than in the adult.

About thirty years ago, Swinhoe described a Swan from China under the name of *Cygnus davidi.* His description of the bird is very imperfect, but the colour of the legs and feet is stated to be orange-yellow—a remarkable character.

THE TRUE GEESE.

ALL the species of Geese which are known with certainty to occur within Indian limits belong to the group of which the Grey Lag-Goose is the oldest representative, and consequently they are termed True Geese.

The Geese are hardly separable by any characters from the larger Ducks. Of the Geese, however, it may be said that they have longer legs than the Ducks and they are placed in a more forward position. As a consequence, Geese are able to walk and run with considerable ease and comparative grace. They feed more on the ground, and less on the water, than Ducks. Their bills are furnished with strong serrations, more adapted for cropping herbage than for sifting water and mud. Geese have only an autumn moult, and the sexes are alike.

The True Geese, together with the Swan-bill Goose (which is described further on and only differs from the True Geese in the shape of the bill), may always be recognised by the pattern of the primaries, the uniformly dark axillaries and the white upper tail-coverts. These characters apply equally to the old and young birds, and are very constant.

The True Geese may be divided into three sections. In the first, which contains the Grey Lag-Goose and the two White-fronted Geese, the whole bill, including the nails, is of one uniform colour throughout. In the second, which contains only the Barred-headed Goose, the bill itself is entirely of a pale colour, but the nail is black. In the third, containing the Bean-Goose and its allies, the bill is black, with a broad, pale band across it, between the nostrils and the nails. These characters will be found very constant and of great use in separating young birds.

The Geese of the first two sections have always been well understood, and there is no reason to think that sportsmen have failed to identify them properly. The Geese of the third section, however, have always been difficult to determine. Count Salvadori, when writing his "Catalogue" of these birds, not very long ago, was unable to arrive at any satisfactory conclusion with regard to one or two of the species. The British Museum has received several additional specimens of Geese of this section within the last year or two, and after a careful examination of all the material available, I have come to the conclusion that there are six recognisable species of Geese of the third section, or of the type of the Bean-Goose. This latter is known to occur in the Indian Empire, and it is not improbable that the other five may, at some time or other, be found to occur within our limits. I have, therefore, in the proper place, given the characters by which these Geese may be known. Their identification, however, cannot always be made a matter of absolute certainty, without specimens of the different species for comparison, but I have striven to give characters for each species that cannot well be misunderstood. It will always be advisable, when possible, to preserve any specimens of Geese of this type that the sportsman may be fortunate enough to meet with, for subsequent inquiry and examination. The differences between the various species lie almost entirely in the colour and size of the bill, and, failing facilities for preserving the whole bird, the head and neck alone will suffice, together with a brief note on the colour of the bill in life, and the length of the wing.

90. THE GREY LAG-GOOSE.

Anser anser, (LINNÆUS).*

Outer primaries grey, tipped with blackish; inner primaries and outer secondaries uniformly blackish; all with white shafts.

Upper tail-coverts white.

Axillaries bluish grey.

Bill of a pale colour, without any black, and measuring about 2·6 from the forehead straight to the tip of the nail of the upper mandible.

Rump grey.

Sexes alike.

VERNACULAR NAMES:—*Sona*, *Hans*, *Raj-hans*, *Kurria-sona*, Upper India; *Budtbay*, Doab; *Kar-hans*, Bhagulpur; *Mogala*, *Mogala-buttuk*, Nepal Terai; *Kangnai*, Manipur; *Tau-ngan*, Burmese.

I FIND it difficult to separate the Grey Lag-Goose of India from the Grey Lag-Goose of Europe, as Count Salvadori has done, and I prefer to treat them as one species for the present. The series of the Indian bird in the British Museum is very large, whereas the series of the European bird is very small. Materials for instituting a proper comparison between the two are therefore wanting, but so far as I can judge, the differences between the two races are very trifling, and apparently not constant.

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* *Anser rubrirostris* of the British Museum Catalogue.

The Grey Lag-Goose is found in India as a winter visitor, arriving at the end of October, and leaving at the end of March or the beginning of April; these dates being varied according to locality and surrounding circumstances. This Goose is not confined to the plains, but occurs in all suitable places in the Himalayas up to 6000 feet. It ranges from the extreme west of Sind and of the Punjab to the extreme east of Assam. In India, the ordinary southern limit of this species appears to be a rough line drawn from the mouth of the Nerbudda river to the southern edge of the Chilka lake, but a correspondent of the "Asian" informs us that he has observed this Goose as far south as the 18th degree of latitude, and far into the Vizagapatam District. On the east, it ranges from Assam to Manipur, where Mr. Hume obtained it on the Logtak lake. It occurs on the Chindwin and Irrawaddy rivers, and in the latter river it is abundant down to Myingyan at least.

Outside our limits the Grey Lag-Goose has an immense range from the Atlantic to the Pacific, extending far north in Europe and Western Asia, but apparently not above the 55th degree of latitude in Eastern Asia. In winter it is found as far south as the Mediterranean, the Caucasus, Northern Persia, India and Southern China. Our Indian visitors probably migrate to Turkestan and Central Asia, where this Goose is known to nest abundantly.

The Grey Lag-Goose is a gregarious bird, being found in parties which number from half a dozen to several hundreds or even thousands, but it does not associate much, if at all, with other water fowl. The food of the Goose is almost entirely vegetable, and it spends most of its time on land, feeding on crops in the mornings and evenings, and resting during the day on the shelving banks of some river or lake. It is partial to tender grass, young corn, beans and other vegetables, and in a smaller degree to the shoots of water plants. Both when feeding and when resting during the day, Geese are particularly vigilant and difficult of approach.

When once started, they fly well, but they are slow in taking wing, either from land or water. They run along the ground several paces before they can rise, and, if on the water, they beat the surface with their wings, at the same time cackling and stretching out their necks. They swim with great ease, but they do not dive much, unless wounded. On migration, they fly at a great height, and the flock forms itself into two oblique lines meeting at an angle in front.

Regarding the cries of the Grey Lag-Goose, the late Mr. Seebohm wrote:—"The note of the Grey Goose closely resembles that of its congeners; it is not so musical as the trumpeting of the Swan, nor quite so harsh as the quack of the Duck. It is impossible to represent it exactly on paper: one of its notes, supposed to be associated with love and war, is a loud trumpet-like sound; but as one bird calls to another on migration, or on their feeding-grounds, it sounds something like *gag*, *gag*. When the goose and the gander are chattering together, it is lower and softer, and might be represented as *tat*, *tat*, *tat*; but when a flock of Geese is suddenly surprised it becomes an alarm-note—loud, shrill, harsh, long-drawn-out at intervals, *kak*, *kak*, *kike*, sometimes even *ki-ike*."

The Grey Lag-Goose is an early breeder, and no time is apparently lost in courtship. They choose the wildest moors and swamps for their breeding-grounds. The nest is a clumsy structure of grass and reeds on the ground, and when the eggs are laid, the Goose lines it with down from her body. The number of eggs varies from six to twelve or even fourteen. The eggs are rough in texture and of a creamy white colour. They measure about 3·5 by 2·3. The gander watches near the nest while the goose is sitting, and, when the young are hatched, assists his mate to look after them.

The adult bird has the whole head and neck brown, with a very narrow fringe of white round the base of the upper mandible, the brown darker on the crown, the feathers of the neck soft and pointed. The mantle, back, scapulars and the longer inner secondaries are ashy brown, each feather margined with greyish white. The rump is grey and the upper tail-coverts white. The two middle tail-feathers are ashy brown, broadly tipped with white. The others are basally brown, terminally white. The breast is ashy grey, each feather edged paler. The sides of the body are brown, with grey margins to the feathers. The whole abdomen and the under tail-coverts are white, the former with broad, irregular, broken-up black bars or patches. The lesser upper wing-coverts and those on the margin of the wing are pale bluish grey, edged paler. The other upper wing-coverts are brown with grey margins. The outer primaries are grey, with blackish tips; the remainder are wholly blackish. The outer secondaries are blackish, very finely and narrowly margined with whitish. The shafts of all the primaries and outer secondaries are white. The axillaries and under wing-coverts are bluish grey.

Young birds have no black marks on the abdomen, and no white round the base of the upper mandible.

Males are not invariably larger than females. Both sexes vary much in size and weight. Length about 32; wing about 18; tail about 6. The bill is said to vary from whitish to dull reddish brown. The irides are brown. The legs and feet are of the same colour as the bill. Weight nearly up to 9 lb., but much heavier birds appear to be found in Europe.

91. THE LARGE WHITE-FRONTED GOOSE.

Anser albifrons, (SCOPOLI).

Outer primaries grey, tipped with blackish; inner primaries and outer secondaries uniformly blackish; all with white shafts.

Upper tail-coverts white.

Axillaries dark ashy.

Bill of a pale colour, without any black, and measuring about 1·8 from the forehead straight to the tip of the nail of the upper mandible.

Rump dark brown or blackish.

Sexes alike.

VERNACULAR NAME:—*Rhai-hans*, Oudh.

THE Large White-fronted Goose is, no doubt, commoner in India, during the winter, than is generally supposed. It appears to be overlooked, or perhaps mistaken for other Geese.

This Goose has occurred in various localities in the Punjab, and Sind. Lieut. C. D. Lester obtained it in Cutch.

Messrs. Hume and Marshall inform us that it has been found in the Ganges and Jumna in the Saharanpur and Moozuffernugger districts. Mr. G. Reid records it from Lucknow, and Mr. Hume had a specimen which was killed a few miles south of that place. Colonel Graham is our authority for the statement that this Goose occurs right up the valley of Assam. Capt. F. T. Williams very kindly sent me a photograph of a specimen of this Goose, which he shot on the Chindwin river on the 27th November, 1896. Lastly, Major G. Rippon writes to me that he was informed that some officers of the 4th Burma Battalion had shot this species on the lake at Fort Stedman, in the Southern Shan States.

In the summer, this Goose is found in high northern latitudes from Greenland to Eastern Siberia. In the winter, it migrates as far south as the Mediterranean, North-East Africa, the Caspian Sea, India and China.

Very little has been written on the habits of this Goose. The late Mr. Seebohm, who did not however separate this species from its relative, the Small White-fronted Goose, says:—" The notes of the White-fronted Goose are somewhat similar to those of the Grey Goose, but are more trumpet-like in tone and more rapidly repeated, so that it has sometimes been called the Laughing Goose. In other respects the habits of the White-fronted, Bean-, and Grey Geese are so similar that the description of one might almost pass for that of the others."

Captain Shelley remarks:—"This is the most abundant Goose in Egypt, where it may usually be met with in flocks, but does not remain in the country later than March. When on the wing they fly in a wedge-shaped flock, and frequently utter a loud harsh cry, which may be heard at a considerable distance. They are generally on the move just before sunrise and sunset, and as they are very regular, taking the same line of flight and feeding at the same spot each day, they may be most readily obtained by lying in wait for them. If once fired at, the flock generally leaves the neighbourhood altogether."

Middendorff found this species breeding on the Taimur peninsula in July. On the 10th of that month he found a nest containing two eggs in a depression in the top of a cone-shaped tussock, the eggs being well bedded in down. About this time, the birds were beginning to moult.

In the British Museum there are four eggs of this Goose, taken in Greenland. Three are much stained, and are of a dirty yellow colour. One is of a dull white colour. They average 3·1 in length and 2·05 in breadth. In shape they are broad ovals, and the shell is fairly smooth.

In the adult bird the forehead, for a distance of about three-quarters of an inch from the bill, a broad band on either side the base of the upper mandible, and the whole chin are white, edged everywhere by an ill-defined blackish band. The remainder of the head and the whole neck are brown, paler on the sides of the face and on the throat, mottled darker on the crown. The mantle, back, scapulars, and the longer inner secondaries are ashy brown, each feather margined with greyish white. The rump is dark brown or blackish, and the upper tail-coverts white. The two middle tail-feathers are ashy brown, broadly tipped with white. The others are basally brown, terminally white. The upper part of the breast is pale ashy grey, each feather edged paler. The remainder of the lower plumage is more or less white, with broad, interrupted, black bars and patches, except on the lowermost portion of the abdomen and the under tail-coverts, which are plain white. The sides of the body are brown, each feather with a broad pale margin. The upper wing-coverts are dark ashy, the lower series with broad whitish tips. The outer primaries are grey with blackish tips ; the inner primaries and the outer secondaries are wholly blackish, the latter very narrowly margined with grey. The axillaries and under wing-coverts are dark ashy.

Younger birds have the chin brown, like the throat ; but the lower plumage is as fully marked with black as in the adult.

Still younger birds have a very small amount of white on the forehead and sides of the base of the upper mandible, but a considerable amount of black on the abdomen. Birds in first plumage have no white on the face, and the lower plumage is unmarked with black.

Length about 27 ; wing about 15½ ; tail 5. The female is a little smaller than the male. The bill appears to vary from pale livid fleshy to orange-yellow, the nail being whitish in all cases ; the irides are brown ; the legs and feet are orange. Weight up to rather more than 5 lb.

92. THE SMALL WHITE-FRONTED GOOSE.

Anser erythropus, LINNÆUS.

Outer primaries grey, tipped with blackish; inner primaries and outer secondaries uniformly blackish; all with white shafts.
Upper tail-coverts white.
Axillaries dark ashy.
Bill of a pale colour, without any black, and measuring about 1·3 from the forehead straight to the tip of the nail of the upper mandible.
Rump dark brown or blackish.

Sexes alike.

VERNACULAR NAMES :—None known.

THERE are few authenticated instances of the occurrence of the Small White-fronted, or Dwarf, Goose in India. Colonel Irby, Dr. Bonavia, and Mr. A. Anderson met with this species in the province of Oudh, and a specimen now in the British Museum, from the Hume Collection, marked "Oudh," is probably a bird obtained by Dr. Bonavia. Three specimens shot by Mr. W. N. Chill in March, near Sultanpur, thirty miles south of Delhi, are also in the same collection. These four Indiàn-killed specimens are all very fine adult birds. Quite recently Mr. F. Finn received three live birds of this species from some part of Upper India.

The distribution of this Goose is very similar to that of the Large White-fronted Goose, except that it does not appear to occur to the west of Lapland. It extends from that country right across Asia to Japan, being found in summer in very high latitudes. In the winter it migrates to Southern Europe, the Caspian Sea, Central Asia, India, and China.

The habits of this Goose are seldom referred to at any length by European writers. I shall first quote what Dr. Bree says of this species.

He writes :—" Their manners and habits of flight are very similar to those of Geese in general. In their long migrations they form an oblique line, one after the other; and M. Dubois states that they will sometimes follow flocks of Harvest Geese, at the same time keeping at a distance from them. If these last fly down on a field or piece of water, they also stop, but they do not then approach nearer their companions of the voyage than while travelling. They are very fond of swimming about, which they do with great agility. They feed upon roots, grain, and water lentils. They are not very wild, but at the same time cautious, and keep at a long range from the sportsman's gun."

Mr. Dresser says:—"In habits the present species is said to assimilate closely to the White-fronted Goose. It breeds, like many of the Geese, in the extreme north of the European and Asiatic continents. Dr. Sundström informs me that, according to Lieutenant Widmark, this Goose breeds in Lapland in places near where there is ice all the season, and nests in considerable numbers; but I have no detailed information respecting its nesting habits. Lieutenant Widmark says that it moults about the 1st of July, and he saw a flock in full moult early in August. When in moult, they collect in vast flocks, and frequent localities where the ice always remains; and though unable to fly, they are swift enough on the foot to escape capture."

In the British Museum there are eggs

of this species collected in Finmark and Lapland by Messrs. Wolley, Wheelwright and Meves. The largest clutch in the collection consists of four eggs, but probably more than this number are usually laid; in fact, Prof. Collett states that five or six eggs form the normal number. The shell is rather smooth, and has a small amount of gloss. The colour is pale yellowish. They measure from 2·7 to 3·27 in length and from 1·8 to 1·93 in breadth. The only dated eggs record the fact that they were taken in June.

This species differs from the Large White-fronted Goose in size, and, in a smaller degree, in plumage.

In the Small White-fronted Goose, the white on the forehead extends back about one inch and a quarter, in fact to beyond the eyes. Only the extreme tip of the chin is white, not the entire chin. The dark band bordering the white of the face is much blacker. The colour of the head varies from brown, with a reddish or fulvous tinge, to dark brown, with a chocolate tinge. The breast and abdomen are pale brown with grey margins to the feathers and with broad black bars and patches as in the larger species. The lowermost portion of the abdomen and the under tail-coverts are pure white.

Young birds have no white whatever on the face, and the lower plumage is pale smoky brown, the feathers margined with dull fulvous, but the lower part of the abdomen and the under tail-coverts are pure white.

Birds acquiring the adult plumage have the forehead and sides of the base of the upper mandible white, streaked with black, and surrounded by a black band. It would appear that the black band recedes as the amount of white on the face increases. The black band is apparently always of the same width and always in immediate contact with the white, no matter what the extent of the latter may be.

Length about 22; wing about 14½; tail about 4. According to Mr. Dresser the bill is dull white, with a fleshy tinge; nail pale horn-colour; iris brown; legs and edge of eyelids orange-yellow. A young bird shot by Dr. Finsch in Western Siberia, and now in the British Museum, has the bill deep red. The colours of this specimen, however, when first killed, are recorded on the label in German, and may be translated thus: Bill dirty flesh-colour, and also the eyelid; legs pale dirty ochre, the webs brownish.

Mr. Finn, writing of the three live birds of this species already mentioned, states that the bill is of a beautiful rose-pink and the eyelids lemon-yellow; the iris dark and the feet orange.

The weight of this Goose does not appear to have been recorded.

93. THE BARRED-HEADED GOOSE.

Anser indicus, (LATHAM).

Outer primaries grey, tipped with blackish; inner primaries and outer secondaries uniformly blackish; all with white shafts.

Upper tail-coverts white.

Axillaries bluish grey.

Bill entirely of a pale colour, with the nail of both mandibles black.

Rump bluish grey.

Sexes alike.

VERNACULAR NAMES:—*Hans*, *Kureyee-hans*, *Raj-hans*, *Birwa*, Hind.; *Paria*, Nepal Terai; *Nangpa*, Ladak; *Neer-bathoo*, Coimbatore; *Bonooria-hans*, Assam; *Badi-hans*, Chittagong; *Kang-nai*, Manipur; *Tau-ngan*, Burmese.

THE Barred-headed Goose visits the plains of India in the cold weather, arriving in October and leaving in March, or even April, but these periods vary, of course, according to locality and climate.

This species may be considered a

common bird in Northern India from the Punjab to Assam. On the western side, it appears to occur as far south as Sind and but rarely in the Bombay Presidency ; it is common in the Central Provinces; and on the east coast it extends down to the Chilka lake.

In Southern India, this Goose is by no means so rare as it is generally deemed. Major McInroy, as recorded by Messrs. Hume and Marshall, found it in large numbers in Mysore. Mr. W. N. Fleming tells us that it is a regular cold-weather visitor to the Tinnevelly District, that he once saw a flock of about fifty, and that in 1897 it stayed from November to the end of February. Jerdon, on one occasion, observed this species in the extreme south of India. It is not known in Ceylon.

South of Assam, this Goose has been observed by Mr. Eden in Sylhet, and by Mr. Hume in Manipur. It occurs, as I am informed by Captain F. T. Williams, in the Chindwin river, and I know from personal knowledge that it is common enough in the Irrawaddy river and adjacent tanks and backwaters, down to Myingyan at the least.

Messrs. Hume and Marshall inform

us that this species is found in the Himalayas up to 7000 feet, and also in the lakes of Kashmir. From the fact that the late Mr. Mandelli procured this species in the interior of Native Sikhim in May, it may be inferred that some of these Geese breed in the Himalayas. We know that they breed in Ladak in very large numbers. It is therefore not improbable that many Barred-headed Geese are constant residents in portions of Kashmir and the Himalayas. The bulk of the Indian visitors probably come to us from Central Asia.

The summer range of this Goose extends up to about the 50th or 55th degree of north latitude. Laterally it seems to be confined to the area which lies due north of India and Burma. It is not known to occur in China.

Messrs. Hume and Marshall say of this Goose :—" Their habits are similar to those of the Grey-Lags. Where frequently disturbed, they feed inland only at night; where rarely molested, they will be found feeding up to eight or nine in the morning, and again long before sunset. The day, or at all events the warmer hours of this, they pass by the water's side. They feed in fields, preferentially in those in the immediate neighbourhood of the larger rivers, browsing on the young wheat or waddling awkwardly amongst the heavy clods, amidst which the grain grows, to devour the young shoots, or later, the ripening pods of this vetch. All vetches, lentils, grain, tender grasses and herbs, seem equally to suit their taste, and so long as these are available they eat nothing else; and by the end of December (thin and poor as they usually are when they first arrive), they are generally in fine condition."

As before remarked, these Geese breed on the lakes of Ladak and the numerous lakes of Tibet, indifferently whether the water be fresh or salt. They appear to select islands in these lakes for nesting purposes. The nest is described as being a slight hollow in the ground, lined first of all with a few bits of a soft herb, then with feathers. The eggs are laid in April and May. In the British Museum there are three eggs of this Goose, taken on the Tsomourari lake in Ladak. They are nearly elliptical in shape, slightly rough and glossless. In colour they are a pale yellowish white. They measure from 3·1 to 3·3 in length, and from 2 to 2·2 in breadth.

In the adult bird, the whole head and a broad band down each side of the neck are white; a black curved band across the crown, and a shorter band behind it. The foreneck, immediately below the white throat, is brownish ashy, becoming paler and merging into the grey of the breast, the feathers of which are indistinctly barred with whitish. The whole abdomen and the under tail-coverts are white. The feathers of the sides of the body are brown, passing into rufous and tipped with whitish. The under wing-coverts and axillaries are bluish-grey. The hindneck is brownish ashy, paling on the mantle. The sides of the breast, the lower part of the mantle, the back and the scapulars are grey, each feather passing into ashy brown and tipped paler. The rump is bluish-grey, and the upper tail-coverts are white. The tail-feathers are grey with white margins and broad white tips. The upper wing-coverts are pale, clear, bluish grey. The outer primaries are grey with blackish tips; the inner primaries and the outer secondaries are entirely blackish, the latter with fine, narrow, pale margins. The inner secondaries are ashy brown.

A young bird has the forehead, the

sides of the head and of the neck, the chin, the throat, and the upper part of the foreneck white. The crown of the head and the hindneck are dark brown. The lower part of the foreneck is ashy. The sides of the body are plain grey. In all other respects this bird resembles the adult, but the upper and lower plumages are more uniform with few or no traces of bars or paler tips to the feathers.

The sexes vary in size according to age. Length about 30; wing 17 to 18; tail about 6. The bill varies between yellow and orange, the nail black at all ages; the legs and feet also vary from yellow to orange, the claws black; the irides are deep brown. Weight up to about 7 lb.

94. THE PINK-FOOTED GOOSE.

Anser brachyrhynchus, BAILLON.

Outer primaries grey, tipped with blackish; inner primaries and outer secondaries uniformly blackish; all with white shafts.

Upper tail-coverts white.

Axillaries dark ashy.

Bill black, with a pale band across both mandibles, between the nail and the nostrils, and measuring about 1·7 from the forehead straight to the tip of the nail of the upper mandible.

Sexes alike.

VERNACULAR NAMES :—None known.

THE occurrence of the Pink-footed Goose in India, up to recently, rested on evidence which could not altogether be looked upon as perfectly satisfactory, in view of the fact that there are so many Geese of the same type as the Bean-Goose, and all equally likely to visit India, as stragglers from the north.

Blyth first identified this species as Indian from a drawing of a specimen shot in the Punjab. Colonel Irby shot this Goose near Lucknow. Then Mr. Hume secured two Geese of this species in the Jumna river. Colonel Graham stated to him that this species was not uncommon on the Bhramaputra river in Assam. Again, Major-General J. H. McLeod informs us that he shot one of these Geese out of a flock of about twenty on the Kunawan *jhil*, near Gurdaspur in the Punjab. Lastly, there are two specimens, identified with this Goose, in the Lucknow Museum, which are Indian-killed.

Much doubt must be attached to the identification of a Goose of this type by Indian naturalists who do not have an opportunity of comparing their Indian specimens with others from Europe. Even English authors have confounded the Pink-footed Goose with allied species, and one of our most recent writers, the late Mr. Seebohm, says that this Goose "is so nearly related to the Bean-Goose that its specific distinction from that bird is doubtful." Of course there is no doubt in the minds of most persons, who have studied the subject, that the Bean- and Pink-footed Geese are quite distinct, but I merely wish to show that these Geese are not quite the birds to be identified hastily by sportsmen, or even by good naturalists, without great care.

Fortunately, we have now excellent authority for admitting the Pink-footed Goose into the Indian list. Mr. E. C. Stuart Baker, in his admirable series of papers on the Indian Ducks in the Journal of the Bombay Natural History Society, informs us that he procured a specimen of this Goose in Cachar, and his remarks and measurements fully sustain his identification of the species. The only question which now remains to be cleared up is whether the Pink-footed Goose which visits India is quite the same bird that inhabits Western Europe, or whether it may not be a race which differs from it in a somewhat similar manner that the Chinese Bean-Goose differs from the European Bean-Goose, namely, in the size of the bill or in the colour of the bill and legs.

To the list of the occurrences of a Pink-footed Goose within the limits of the Indian Empire must be added its occurrence at Fort Stedman, in the Southern Shan States, where my friend Colonel E. S. Hastings informs me he procured a specimen on November 12th, 1896. This place is so remote from the ordinary winter quarters of the Pink-footed Goose, that it serves to strengthen the suspicion that the Indian visitors of this type of Goose may well be some separate race from Central Asia or China.

The summer quarters of the Pink-footed Goose are Spitsbergen, Iceland, and probably Franz Josef Land. In winter it migrates to Western Europe, and is found in Great Britain, Scandinavia, Germany, Holland, and France. Its occurrence, therefore, in India must be looked upon as most extraordinary.

Writing of the habits of this Goose in England, Seebohm says:—"During their stay in this country in winter, the flocks of Pink-footed Geese spend most of the day feeding on the stubbles and in the winter corn. They are of course much persecuted, and have become very wary; as soon as it begins to get dark they leave their feeding-grounds and retire to the nearest sandbank on the coast; but as soon as the moon rises, they seem to think themselves safe again, and return to the fields, where they remain until the moon sets, and the darkness warns them to seek safety again on their favourite sandbank, perhaps a mile or two from shore. They seldom, if ever, frequent the mud-flats or the salt-marshes to feed on the marine vegetation, of which the Brent and the Bernacle Goose are so fond."

Mr. Cordeaux, in his "Birds of the Humber District," says, it "occurs occasionally, but never in such large flocks as the Bean-Goose. It is not unfrequently found singly, or two or three together, in our marshes and lowlands, and is more easily approached than either the Grey Lag- or Bean-Goose. In its habits it prefers low-lying districts, and wet carr or marsh land near the coast, as a rule, not resorting to the higher wolds to the same extent as its congener, the Bean-Goose."

Referring to a Goose they found on Spitsbergen, and which must undoubtedly have been the Pink-footed Goose, Messrs. Evans and Sturge state that they found it "breeding mostly on low rocks near the coast; but some seemed to have their nests in the high cliffs a mile or two from the sea." Mr. Trevor-Battye has given us a very good account of this Goose at its summer quarters in Spitsbergen. He says:—"The Pink-footed Goose is distributed thinly, but generally, over a great part, at any rate, of Spitsbergen. Its breeding-habits do not differ, so far as my observation goes, from those of *A. erythropus* or *A. segetum*. Like these birds, it seldom, on the mainland, nests by the sea, but retires inland, and chooses for its nest some elevated point overlooking a stream or lake. Occasionally it nests upon small islands, and a female bird, with its nest, eggs, and the surrounding turf, now in the National Collection, was obtained by me on a small island off Cape Boheman, in Ice Fjord, on June 26th; the three eggs being then slightly incubated. This was the only pair of Geese upon the island. I shot the female as she flew off the nest, and the male for some time displayed great solicitude, swimming round and round and calling incessantly, but never came within shot. . . . On July 24th two broods of young were running with their parents near the Splendid Glacier. Both these broods were in an advanced state of *grey*—not yellow—down. . . . I have elsewhere described the way in which a Bean-Goose will run along and then squat with its neck stretched straight out along the ground, exactly in the attitude assumed by the Thick-knee or Norfolk

Plover. The Pink-footed Geese of Spitsbergen behave in the same way, if they have their young with them. Provided the ground is not too steep, they run for long distances, sometimes even along the edge of the water without entering it. Pink-footed Geese are remarkably quick upon their legs, and the young birds, when half-grown, can run as fast as the old ones; the latter, if hurried, run with outstretched wings, which hinder them against the wind; but if too closely pressed, the goose, which leads (the gander brings up the rear) will suddenly drop, and the whole party follow her example. You can then walk up and look at them lying there, all in precisely the same attitude, with bodies flattened down and necks outstretched on the ground, so that you must stir them up in order to start them off again. The nest is well guarded by the gander, who will leave his sentry-post and walk round and round the sitting goose on a little track made by his steps, resenting your intrusion by a continued series of short sharp notes, not unlike those of the Brent."

In the British Museum there are three eggs of this Goose, taken in Spitsbergen. They are rather smooth and have a little gloss. In shape they are regular ovals with one end rather sharper than the other. They are of a yellowish white colour, and measure from 3·1 to 3·4 in length and 2·15 in breadth.

The adult has the whole head and neck very dark brown, with a chocolate tinge, and often with a few white feathers at the base of the bill. The upper part of the mantle is brown, with a rufous tinge. The lower part of the mantle, the back, and the scapulars are brown, turning to rufous near the end of the feather and tipped with pale fulvous. The rump is dark ashy, the upper tail-coverts white. The tail is blackish, the feathers edged and tipped with white. The upper wing-coverts are greyish brown, margined more or less with fulvous, according to age, the lower series tipped with fulvous white. The outer primaries are grey tipped with black; the inner primaries and the outer secondaries uniformly blackish, the latter very narrowly margined with whitish. The inner secondaries are dark brown, more broadly edged with whitish. The whole breast is fulvous brown with pale margins, causing a barred appearance. The sides of the body are ashy brown, each feather turning to rufous and tipped paler. The remaining lower plumage is dull white, the upper part of the abdomen more or less distinctly barred with grey. The under wing-coverts and the axillaries are dark ashy.

Younger birds do not appear to differ in any important respect from the adult.

The male is a little larger than the female. The male measures: length about 28; wing about 16; tail about 5½. The bill measures closely on 1·7 from the edge of the forehead straight to the tip of the nail of the upper mandible. The greatest depth of the visible portion of the lower mandible when the bill is closed is ·2 only. The bill is black, with the pale band between the nostrils and the nail pink. This pink colour extends back as far as the hinder corner of the nostril, between the nostril and the margin of the mandible, and sometimes almost to the base of the upper mandible. The irides are brown. The legs and feet vary from flesh colour to pink and purplish pink. Little use can be made of the colour of the pale part of the bill and legs for the identification of this Goose, and the dimensions of the bill and wing are safer guides.

The other five Geese of the same type

as the Bean-Goose are closely alike in plumage, and differ chiefly in size, in the length of the bill, and in the depth of the lower mandible. In the following measurements the length of the bill is always taken in a direct line from the edge of the forehead to the tip of the nail of the upper mandible. By the depth of the lower mandible is meant the greatest depth of its visible portion, when the bill is closed, below the edge of the upper mandible. The bill closes naturally and firmly if the two mandibles are brought together by the pressure of the fingers, even in a dry skin. It is only by a measurement of this kind that the massive or slender character of the lower mandible can be accurately indicated. I am not prepared to give trivial names to these Geese at present, but shall denote them by their systematic names.

Anser fabalis, (Latham). This is the common Bean-Goose of Europe, admitted into the list of Indian birds by Messrs. Hume and Marshall on the strength of a statement made by Blyth that Gould had a specimen from the Deccan in his collection of birds. This specimen is no longer in the Gould Collection, which is now in the British Museum, and some mistake may have been made about it. The bill is slender, measuring from 2·1 to 2·6 in length, and ·3 to ·35 in the depth of the lower mandible. The wing measures from 17 to rather more than 18. The band across the bill is orange, and so are the feet. It extends east to the Yenesei river.

Anser neglectus, Sushkin. This recently described species can hardly be distinguished from *A. fabalis*, except by the colour of the bill and legs, and such characters require to be recorded immediately the bird is shot, if they are to be of any service, for in dry skins the bill and feet of the two species are quite alike. In *A. neglectus*, the band across the bill is of a bright rosy pink and the legs and feet are flesh-coloured. It is a slender-billed species, the depth of the lower mandible being but ·25 in the only specimen I have been able to examine, an adult male. The length of the bill is 2·4, and of the wing 18·5. This Goose was first discovered in the Ufa Government, in Eastern Russia. It will be noticed that the colour of the bill and legs in this species corresponds closely with the colour of the same parts in the Pink-footed Goose, but the two species differ greatly in size.

Anser serrirostris, Gould. This is the eastern form of the common Bean-Goose, characterised by an extremely massive bill. It occurs in Eastern Asia, wintering in China and Japan. This is the form which will probably be found to occur in Burma and the Shan States. The legs and bill are coloured as in the common Bean-Goose of Europe. The bill measures from 2·4 to 2·7 in length. The depth of the lower mandible is just half an inch, and the wing measures from 18 to 19.

Anser middendorffi, Severtzoff. No possible mistake can be made about this Goose. It differs from the other five Geese of this type in having the head and neck a fine golden buff, not chocolate-brown. In addition to this, the bill is of great size, measuring 3·2 in length, and ·45 in the depth of the lower mandible. The wing measures 18·5 in a fine male in the British Museum, obtained by Radde in Amurland in May. Both Radde and Shrenck agree in stating that the legs and the band across the bill are orange-gold, and Middendorff figures the bill as such. This fine species appears to be found in a great part of Eastern and Northern Siberia, and very little is known about it.

Anser mentalis, sp. nov. On looking over the Geese in the British Museum, I was struck by the large size of one of the specimens, its massive bill and white chin. It came from Yokohama, and was once in the Seebohm Collection. I can only regard this Goose as a species which has not before been noticed, and I accordingly give it a distinguishing name. In plumage this species resembles the common Bean-Goose, except that the whole chin is white. The wing measures 19·6, but the sex of the bird is not known. The length of the bill is 2·85, and the depth of the lower mandible ·55. There is nothing on the label of the specimen to show what the colour of the bill and legs was in life. This species, which occurs in Japan and probably in China, is as likely to be found in the eastern parts of Burma as any other species of this section.

Allied to the True Geese, but differing markedly from them in the shape of the bill, is the Swan-bill or Chinese Goose (*Cygnopsis cygnoides*). This species occurs commonly in China in the winter, and may consequently be found in the Northern Shan States. It has the primaries axillaries, and upper tail-coverts of the same colour as the True Geese, and the general colour of the plumage is the same. It has the hindneck and the crown of the head a pale chocolate-brown, and the remainder of the head and neck more or less white. The bill is very large, measuring 3·75 from the edge of the forehead straight to the tip of the upper mandible.

Quite different from the True Geese is the Red-breasted Goose (*Branta ruficollis*), which has very probably occurred in India, as suggested by Blyth. It has the primaries and axillaries black; the upper tail-coverts white. It is a small Goose, measuring about 21 inches in length, and the bill is not more than 1 inch in length. The above characters are alone sufficient to enable any one to separate this Goose from all the other Geese and Ducks of India. Both sexes, when adult, have the head and neck beautifully variegated with white, black, and chestnut, and the breast of the last colour. It occurs in Siberia, in Turkestan and on the Caspian Sea.

THE SHELD-DUCKS.

THE Sheld-Ducks, Sheldrakes, Shiel-ducks or Shieldrakes, as they are variously termed, are birds of considerable size. The sexes are closely alike in colour, and they have only the ordinary autumn moult. They have rather long legs, and are able to walk fairly well. The feathers of the crown of the head are somewhat lengthened.

Of the six species of Sheld-Ducks known, four are restricted to areas within which they are resident. The other two are seasonal visitors to India, but are resident in many parts of their wide range. The Sheld-Ducks may therefore be considered a family of Ducks in which the migratory instinct is disappearing. The primaries of all the species of this group are black.

The two Indian Sheld-Ducks differ from each other in several respects. In the Common Sheld-Duck (*Tadorna*), the upper outline of the bill is very concave ;

the bill is broader near the tip than at the base, and is furnished, in the male, with a fleshy knob which increases in size with age, but is always much larger at the nesting season than at other times; the legs are flesh-coloured. In the Ruddy Sheld-Duck (*Casarca*), the upper outline of the bill is nearly straight; the bill is of equal width throughout, and is not furnished with a knob at any age; the legs are dark in colour.

The term Sheldrake, according to John Ray, who published a small book in 1674, entitled "A Collection of English words not generally used," as quoted by Mr. Stevenson, is derived from the Suffolk word *sheld*, which means flecked or parti-coloured. In Suffolk, a cat of the colour usually called "tortoise-shell" is spoken of as a "sheld-cat."

95. THE COMMON SHELD-DUCK.

Tadorna tadorna (LINNÆUS).*

Primaries uniformly black.
Axillaries and under wing-coverts white.
Speculum metallic green, or bronze, with the outer web of the adjoining secondaries chestnut.
Tail white, tipped with black or brown.

MALE : Breast and mantle rich chestnut.
FEMALE : Breast and mantle dull chestnut, undulated with black.

VERNACULAR NAMES :—*Rararia*, *Shahchakwa*, *Sufaid-surkhab*, Hind.; *Niraji*, Sind.

THE Common Sheld-Duck or Burrow-Duck is a winter visitor to the northern parts of the Empire, but is nowhere common. It has been met with in the Punjab, Sind, Kathiawar, Cutch, the North-west Provinces, Oudh and Bengal. It is said to be rare in Oudh, and it has been observed in the Calcutta market in March and April only. Mr. Eden shot this Duck near the Mirzapur Tea Estate in Sylhet. Mr. Forsyth recorded it from the Bhramaputra river, near Dhubri. Mr. H. Fasson obtained it in Chittagong. Captain A. W. Newbold sent me a specimen which he shot at Myitkyina, on the upper portion of the Irrawaddy river, in December. It also appears to have occurred at Meiktila, which is perhaps as far south as this species is ever likely to reach in Burma.

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* *Tadorna cornuta* of the British Museum Catalogue.

The Common Sheld-Duck is a permanent resident in many portions of its extensive range; migratory, but to no great extent, in others. This species ranges from Western Europe eastwards to Japan and China. It is seldom found north of the 60th degree of latitude, but it has been observed farther north in Europe than in Asia, which is due perhaps to there being more frequent observers in the former continent than in the latter. In winter there seems to be a partial movement of these Ducks, and they are then observed on the southern shores of the Mediterranean, South-western Asia, India, and Southern China. In India these Ducks arrive about the middle of November, and some remain till the middle of April.

The Common Sheld-Duck is usually a sea-coast bird, but in India, where suitable sea-coast is restricted, it is found chiefly on the larger lakes and rivers. It is altogether so uncommon in many parts of its Indian range that its habits have not been closely studied by Indian naturalists, and therefore with respect to their habits I shall quote extensively from English authors who have had better opportunities. But first I shall record a few remarks by Mr. Hume. He says:—"Like the Brahminy Ducks, they are essentially shore birds; until disturbed, I never saw one swimming about in the open water. They are either prowling about on the land near to the water's edge, or else paddling in the shallows close to this latter. With us they are always seen in pairs, or in small parties of three to five in number—never in considerable-sized flocks. They walk with more ease than the Mallard, more like the Barred-headed Goose, but less pompously and with quicker steps. They rise and fly more like other Ducks, with less noise and more rapid beats of the wing than either the Bar-head or Brahminy."

Seebohm, whose accounts of the habits of birds are always so complete, remarks:—"The breeding-grounds of the Sheldrake are for the most part mild enough in temperature for it to be a resident, but in the northern portion of its range it is a migratory bird arriving in March and leaving in October. It is almost exclusively a marine species, breeding in Europe on sandy coasts; but in Asia east of the Caspian, in Turkestan and Mongolia, it frequents inland salt lakes, and in Eastern Siberia it is confined to the salt steppes. In its winter quarters in India, though it sometimes visits the broads and large sheets of fresh water, it always seems to prefer the coast. In England ft is rarely if ever seen inland, always preferring the sandy coasts, especially where the sand is blown into hills, locally called 'links' or 'dunes.' Nowhere is the Sheldrake more abundant than on the west coast of Denmark, where it may almost be said to live in a state of semi-domestication, the peasants making artificial burrows in the sand-hills and robbing the nests systematically until the middle of June, when they allow the birds to begin to sit. Under these circumstances it may almost be said to breed in colonies, but in a truly wild state it is never known to do so.

"The Sheldrake is a somewhat shy

bird, and is more or less gregarious even in the midst of the breeding season. I found it extremely abundant on the shores of the Black Sea, and small parties of them, most consisting of last year's birds which were probably not breeding, were the most conspicuous objects on the lagoons which are so numerous between the Danube and the coast. The call-note of the Sheldrake, which is common to both sexes, is a harsh quack. During the pairing season the male utters a clear, rapidly repeated whistle or trill; and when the young are hatched, his anxious alarm-note to his mate on the approach of danger may constantly be heard, and resembles the syllables *kor*, *kor*, uttered in a deep tone. The flight of the Sheldrake is performed by slow and laboured beats of the wings, very unlike the rapid motion of smaller Ducks, and much more resembling that of the Swan. Although the Sheldrake seldom or never dives, it obtains most of its food in shallow water, aquatic plants, mollusks, and various water-insects being obtained in the fresh-water lagoons, whilst seaweeds and marine animals of various kinds are sought for on the shore. In searching for food they continually immerse the head and upper half of the body, only the tail and rump being visible. On the land they walk with ease, like a Goose. The Sheldrake resembles the Geese in some of its habits, and frequents the pastures, especially in early morning, but not so much to feed upon grass as to search for worms and slugs.

"So far as is known the Sheldrake never breeds in the open, but always in a burrow, generally in that of a rabbit, but less frequently in that of a fox or a badger; and there are reliable instances on record of their having hatched out their young whilst the original owner of the burrow was still in occupation. Sometimes the birds excavate a burrow for themselves, which is generally more or less winding, and extends from six to twelve feet, ending in a chamber, in which the eggs are laid upon a handful of dead grass and scraps of moss. Where it is protected, the Sheldrake is an early breeder, eggs being frequently laid before the end of April; but in localities where it is disturbed, fresh ones may be found as late as the end of May or the beginning of June. Seven to twelve is the ordinary number, but occasionally as many as sixteen are laid; and where the nests are regularly robbed, as many as thirty have been obtained from a single burrow in one season."

Mr. Stevenson in his "Birds of Norfolk" thus summarises the habits of this Duck: "Mr. Selby, from his own observations of the habits of this species upon the Northumbrian coast, states that the males do not pair until their plumage is perfected in the second year, but, once paired, remain constant to the same mate. In the male, also, at the commencement of the breeding season, the fleshy knob at the base of the upper mandible, scarcely perceptible in autumn and winter, 'begins to swell and acquires a beautiful *crimson* hue, and when at its full development, is nearly as large as a marble.' The nests are formed of 'bent grass and other dry vegetable materials,' lined with soft down from the old birds' breasts; and the eggs, from twelve to sixteen in number, 'of a pure white or slightly tinged with green,' are incubated in thirty days, and are sometimes ten or twelve feet from the entrance to the burrow. The male sits on the eggs when the female is off feeding, and both birds, like the partridge and wild duck, will feign lameness and adopt other stratagems to decoy intruders from the vicinity of their young when able to quit their nesting holes, hence probably the name of 'sly goose' applied to this species in some localities. The young are sometimes carried in the bills of their parents down to the sea. St. John, in his 'Natural History and Sport in Moray' (p. 293), refers to the strange instinct which enables the female, sitting on her eggs many feet under ground, and more or less distant from the sea, to know to a moment when the tide begins to ebb, and then and then only to betake herself to the freshly exposed feeding grounds. The males of this species vary much in size, as may also the females, but the latter are always smaller than the males as well as less brilliant in colour; but, unlike the true Ducks, both sexes in the genus *Tadorna* are alike in plumage, and retain it when once fully acquired. The flesh of the Sheldrake is coarse and unpalatable, and its food consists, according to Selby, of 'marine vegetables, molluscous shell-fish, insects, etc.;' but so minute are some of the forms of mollusca which afford them a meal, and so great their consumption, that Thompson, in his 'Birds of Ireland' (vol. iii. p. 69), describes the crop and stomach of one of these birds as containing by a careful computation not less than twenty thousand minute mollusca."

The Common Sheld-Duck lays from April to the beginning of June. The eggs number from seven to twelve, and occasionally as many as sixteen. They are smooth and have little gloss. In colour they are creamy white or very pale yellowish white. They measure from 2·5 to 2·75 in length and from 1·9 to 2 in breadth. The down, taken from the nest, is of a beautiful lavender-grey colour.

The adult male has the whole head and neck glossy black. The upper part of the mantle and breast is white, forming a broad collar. The lower part of the mantle and breast is rich chestnut, forming a broad band below the white collar. A black band occupies the middle of the chestnut breast, and widens into a broad patch which covers the central portion of the abdomen. The under tail-coverts are pale chestnut. The remainder of the lower plumage, the axillaries and the under wing-coverts, are white. The whole of the upper wing-coverts, the inner scapulars, the back, the rump, and the upper tail-coverts are white, frequently tinged with pale buff. The outer scapulars are deep black. The tail is white, tipped with black. The primaries and their coverts are black. The outer secondaries are metallic green or coppery bronze on the outer, largely white on the inner, web. A few of the secondaries next the inner side of the speculum, are chestnut on the outer web, with an inner black margin, and white on the inner web. The inner secondaries are entirely white. Immediately after the moult, the chestnut feathers of the plumage are all margined paler. These margins get worn away after some time.

The adult female resembles the adult male, but has the chestnut parts of the body-plumage of a dull tint, each feather mottled or undulated with black, and narrowly edged with white. The dark portion of the lower plumage is brown instead of black; and the inner secondaries are ashy.

The duckling, on moulting into first plumage, about November, has the head and upper neck dark brown, with the cheeks, and a space all round the bill, white. The remaining body-plumage is pure white, except a broad band covering the lower portion of the mantle and the sides of the breast, which is pale chestnut, the feathers undulated with black, and narrowly tipped with white. The white tail is tipped with brown. The inner scapulars are white, and the outer brown, narrowly margined with white. The upper wing-coverts are white, but the lower series is tinged with ashy. All the quills of the wing, except the first four primaries, are tipped with white, and the first two primaries are largely white at the base. The speculum is much duller than in the adult. The secondaries next the inner side of the speculum are dull chestnut on the outer webs, and the remaining inner secondaries are dark ashy. The knob on the bill of the male does not make its appearance till the breeding season of the second year.

The young bird attains the complete plumage of the adult female in the course of the first winter.

Male: length about 24; wing 13; tail 4½. Female: length about 21; wing 11½; tail 4. In the adults the bill is red, the nail dusky; the irides brown; the legs and feet flesh-coloured. Weight up to nearly 3 lb., as recorded by Messrs. Hume and Marshall, but probably heavier birds are to be met with.

96. THE RUDDY SHELD-DUCK.

Casarca casarca, (LINNÆUS).*

Primaries uniformly black.
Axillaries and under wing-coverts white.
Speculum metallic green or bronze, with the outer web of the adjoining secondaries chestnut.
Tail wholly black.

Sexes alike, except that the male assumes a black collar in the breeding season.

VERNACULAR NAMES :—*Surchab, Lal, Chakwa*, Hind.; *Mungh*, Sind; *Bugri*, Beng.; *Sarza, Chakrawak*, Mahr.; *Neer-bathoo, Neer-kolee*, South India; *Bassana, Chilluwa*, Tel.; *Kesar-pandia, Panda-hansa*, Uriya; *Hintha*, Burm.

THE Ruddy Sheld-Duck, or Brahminy Duck, is a winter visitor to every portion of the Indian Empire except the southern portions of Tenasserim, and even there it is by no means certain that it does not occur, for the late Mr. Davidson, a most practised observer, believed that he saw a straggler of this species on one of the islands of the Mergui Archipelago. I did not myself observe this Duck in the Shan States, but Major G. Rippon informs me that it does occur there, although it is not common. It has been observed in Ceylon, but it appears to be rare in that island.

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* *Casarca rutila* of the British Museum Catalogue.

The Ruddy Sheld-Duck is a bird of a very limited range of migration. In the Himalayas, it is probable that many of these Ducks do not migrate at all in the ordinary sense, but merely move from one altitude to another according to season. It is also most probable that the numerous Ducks of this species that visit the plains of India retire to breed no further north than the Himalayas, and the adjacent parts of Tibet. Indeed, it is a matter for surprise that some of these Ducks do not breed in the plains of India, for they breed in Algeria and Palestine, apparently at no great elevation.

The Ruddy Sheld-Duck is a permanent resident in Southern and Eastern Europe and in Northern Africa. It extends throughout Asia, ranging in summer up to about the 55th degree of north latitude, and wintering in India and Southern China.

This well-known Duck arrives in the northern portions of the Empire in October, but it does not generally reach the southern parts of India till November. It leaves again in April, but many birds appear to delay their departure till May.

Although these Ducks migrate into and from India in flocks, they are, during their residence in the plains, almost invariably found in pairs or in a collection of pairs, each couple seeming to act independently of the other couples. They frequent the sandbanks of the larger rivers by preference, but they are often found on the clean banks of lakes, and even on the margins of extensive swamps. By choice they seem to prefer sweet water, but they are sometimes seen on brackish pieces of water. They swim very little, and they obtain their food almost entirely on land. When on the water, however, they swim well, and can dive when driven to it. They walk about with ease, and are strong flyers.

Brahminy Ducks avoid cover of any sort, and seldom rest except on bare spots where they can see a long distance round them. They are remarkably wary, and difficult to approach as a rule, and they not only exercise caution on their own behalf, but they give warning to all the other wild fowl in their vicinity by loud and persistent calls. The ordinary cry of this Duck consists of a loud double note.

The Ruddy Sheld-Duck feeds chiefly at or near the water's edge, and does not apparently go inland to any distance. Its food is very varied, consisting of young grass and corn, water-plants, shells, worms and spawn. It has been accused of eating carrion, but probably does so only on rare occasions. Its flesh has a rank, fishy taste, and is hardly worth eating. When properly skinned, however, before cooking, Mr. Hume tells us that it forms a very tolerable addition to a stew.

Seebohm thus describes the habits of this Sheld-Duck:—"It is difficult to imagine a more beautiful sight than a pair of Ruddy Sheldrakes with their young, the duck enticing them to follow her in order to hide amongst the reeds, whilst the drake swims about backwards and forwards in an agitated manner, uttering a rather loud and monotonous cry, intermediate in sound between that of the syllables *kark* and *kerk*. I once surprised a brood of half-grown Ruddy Sheldrakes, at some little distance from the water's edge, on the banks of Lake Tuzla, a salt lagoon connected with the Black Sea. I tried to catch them before they reached the water, but they were too quick for me; meanwhile the old birds flew round and round within easy shot, uttering their peculiar cry, and trying to draw off our attention from their brood. Like the Common Sheldrake, the Ruddy Sheldrake differs in its habits from the more typical Ducks, one of its peculiarities being, that when the young are hatched, the drake takes his share in looking after them. He does not moult into summer dress, and consequently is not obliged to desert his mate at the most critical period of her annual duties, to hide himself in the thick morasses."

The Ruddy Sheld-Duck breeds abundantly in the high central portion of the interior of the Himalayas, in Ladak, Turkestan and Tibet, at elevations varying from 12,000 to 16,000 feet. Although ducklings have frequently been observed in these countries in June, the eggs do not appear to have been taken by any European. The nests are said to be placed in holes of cliffs.

Eggs of this species are decidedly rare. In the British Museum there are some that were laid in captivity in the Zoological Gardens of London, but only three taken from the nests of wild birds. One of these was taken by the late Mr. Salvin in Algeria, and he thus described the manner in which the nest was discovered :—" Though this bird is numerous in all the salt lakes of the elevated plains, its egg is one of the most difficult to obtain. One nest only rewarded our labours. The rarity of the eggs is hardly so surprising, when the situation chosen by this bird for its nest is considered. It selects a hole or crevice of a cliff for its breeding place, and associates with the Raven, the Black Kite, and Egyptian Vulture during the period of the reproduction of its young. Almost immediately on encamping at Aïn Djendeli we used daily to see a pair of Ruddy Shieldrakes pass over our tents, their direction always being backwards and forwards between the cliffs to the south of us and the small marsh between us and the lake. After careful investigation, the nest was discovered to be in a hole in the face of a rock, which required all the skill of Mohamed and all our appliances of ropes, etc., to reach. The result was four hard-set eggs, which are now in the collections of Messrs. Tristram, Simpson, J. Wolley and myself. Though the Arabs were aware of the habits of this bird, we did not succeed in obtaining any more eggs."

Canon Tristram, also writing of Northern Africa, says :—" At Bou Guizoun I captured some half-dozen nestlings of various ages in the downy state, some of them scarcely more than a day old; and yet the only place where they could possibly have bred, and where we had procured a nest three days previously, was a range of cliffs more than twelve miles distant."

Messrs. Elwes and Buckley found this Duck common in the Dobrudscha, and write :—" In its habits it resembles the Common Shell-drake, but is more fond of fresh water and of inland ranges of rocks, whither it resorts in the breeding-season. The nest is very difficult to find, as it is always in a hole, sometimes in the middle of a corn-field, and the male bird keeps watch near by to call the female off her eggs when any one approaches."

Lastly Colonel Prjevalsky tells us how these birds nest in Mongolia. He remarks :—" During migration these Ducks assemble in large flocks of over a hundred, but never mix with any other kind. Each pair keep very strictly to themselves; and probably such a bond is formed for life. During the breeding-season the males very often fight, and attack even Drakes of other species of Ducks. They build in holes or clefts in the ground, and sometimes even in the fireplaces of villages deserted by the Mongols; and in the latter places the female birds, while hatching, get almost quite black with soot. The male apparently does not assist the female in hatching; but as soon as the young are hatched, it most vigilantly watches them."

The eggs are creamy white, very smooth, and with a considerable amount of gloss. They are almost a perfect ellipse in shape. They measure 2·7 by 1·9.

The adult male has the head buff, the front portion paler and frequently whitish. The whole neck, the mantle, the back, the sides of the breast and the whole lower plumage are chestnut, the abdomen tinged with vinous. The axillaries and the under wing-coverts are white. The uppermost scapulars are chestnut, the concealed lower feathers white or ashy. The lower back is buff, vermiculated with black. The rump, the upper tail-coverts, and the tail are black. The wing-coverts are white, frequently with a buff tinge. The primaries and their coverts are black. The outer secondaries are metallic green or coppery bronze on the outer, largely white on the inner, web. The remaining longer secondaries are chestnut on the outer, more or less ashy on the inner, web.

The adult male has a narrow black ring round the neck during the breeding season, and this ring is often present on birds when they first arrive in India in October, but is soon lost. It is resumed again before leaving in March.

The adult female resembles the adult male, but never assumes the black ring round the neck. The front part of the head often, but not always, is paler than in the male. The feathers of the chestnut parts of the plumage usually have pale tips.

Ducklings, after changing from the down plumage, resemble the adult female; but the scapulars, the upper back and the inner secondaries are brown, vermiculated with rufous. The tail is indistinctly barred with rufous and tipped with buff.

Male: length about 26; wing 15; tail 6. Female: length about 23; wing 14; tail 5½. The bill is black; irides dark brown; legs and feet very dark brown. Weight up to about 4¼ lb.

THE COMB-DUCKS.

THE Comb-Duck or Nukta is the only representative of the group within our limits. It is a resident species, and is widely distributed.

The two sexes of the Comb-Duck differ slightly in plumage, and the drake is very much larger than the duck. The bill is large and of equal width throughout; that of the male being furnished with a fleshy knob, which is about two inches in diameter at the breeding season, but considerably reduced in size at other periods. The legs and feet are very massive, and these Ducks are able to walk well. The wing is large, but not very strong, the outer secondaries reaching to about the tips of the primary coverts when the wing is closed. There is no distinct speculum, but there is a large amount of lustre on the wing. The primaries are uniformly black. The spur which, in almost all Ducks, is to be found at the bend of the wing, is, in this species, strongly developed.

Although the Comb-Duck resembles the Indian Wood-Duck in having the head and neck white, spotted with black, these two species differ in so many important respects, notably in the shape of the wing, the relative strength of the legs and feet, and the colour of the axillaries and under wing-coverts, that they do not appear to me to be in any way closely related.

97. THE COMB-DUCK.

Sarcidiornis melanonota, (PENNANT).

Primaries uniformly black.
Axillaries black.
Head and neck white, mottled with black.

MALE: Lower back grey; rump black; wing about 15.
FEMALE: Lower back and rump grey; wing under 12.

VERNACULAR NAMES:—*Nukta*, Hind.; *Nakwa*, Chutia Nagpur; *Naki hansa*, Uriya; *Jutu chilluwa*, Telugu; *Dod sarle haki*, Canarese; *Neer koli*, Coimbatore; *Tau-bay*, Burmese; *Bowkbang*, Karen.

THE Comb-Duck, Nukta, or the Black-backed goose of Dr. Jerdon, is found as a permanent resident over almost the entire Indian Empire.

On the north-west, its limits are the Ravi and Indus rivers. On the north, it is found to the foot of the Himalayas, but it does not appear to enter the valleys. From the Himalayas, this species extends down to Ceylon, being rare or absent from some of the tracks of country which are very dry and naturally unsuited to its habits.

This Duck extends throughout Assam and thence southwards to the southern limits of Pegu. To the east its range spreads out to the Southern Shan States, where, as Major G. Rippon informs me, it is common as far as Moné at least. It has not been procured in Tenasserim.

It is not a common bird in Upper Burma, and none of my friends appear to have met with it, except Captain F. T. Williams, who informs me that this Duck occurs on the Chindwin river, and Major J. H. Sewell, who tells us in the pages of the Journal of the Bombay Natural History Society that he shot it near Kyouksé, and that it is common at Yamethin, where it also breeds.

The Comb-Duck of India is identical with the Comb-Duck which is found over a considerable portion of Africa and in Madagascar.

The Comb-Duck occurs chiefly in the plains, but in suitable localities it may be found up to an elevation of 2000 feet or upwards. It affects tanks and swamps which are covered with weeds and are surrounded by jungle, and it is comparatively seldom seen on large streams. It does not, however, avoid the smaller streams if these have a sluggish current and run through jungle. These Ducks may be generally observed in pairs, but when at rest during the day I have seen as many as twenty or thirty together. They are heavy, clumsy birds, but, when once on the wing, they fly well. They are not particularly wary, and I have seldom found any difficulty in approaching a flock. They seem to feed mostly in the mornings and evenings, and they spend the hotter part of the day resting on banks or perched on some big bough of a tree. This Duck feeds almost entirely on the water, eating water-plants and the various small forms of animal life found in water. At times it appears to be partial to young rice and grass. As an article of food, the flesh of the Comb-Duck is not comparable with the flesh of many of the migratory Ducks, but it is very palatable when fairly young, and not to be despised even in the case of the older birds. The note of this Duck is seldom heard, and has been variously described as a low guttural quack-like sound, and as a loud cry more like that of a goose than of a duck. According to Mr. Stuart Baker it also utters loud trumpet-calls. When wounded this species dives well and is very difficult to catch.

The Comb-Duck breeds in the rainy season from the end of June to September, according to locality and rainfall, but in Ceylon it appears to breed in February and March.

The nest is almost invariably built in a natural hollow of a large tree, or on a fork formed by three or four large branches. It is sometimes, however, placed in holes of old ruined forts, and sometimes the Comb-Duck appropriates the deserted nest of some large bird of prey. Mr. Hume once found a nest in a regular swamp at one end of a *jhil*, in amongst a thick growth of sedge and rush. Mr. E. H. Aitken once found the nest in a hole in a bank of a stream, as recorded in the Journal of the Bombay Natural History Society. I reproduce a portion of Mr. Aitken's note. He says:—

"On the 30th of August, eighteen years ago, I was wandering about with my gun on the banks of a small brackish stream, near Kharagora, when a female Comb-Duck got up and went off. I fired and missed her. She flew on for some distance, then turned and came back straight for me, and I killed her. She was handed over to the cook, and in the course of the day he came to say that he had found an egg in her. It was ready to be laid, and there was no appearance of any more, so I concluded that the bird had made its nest and laid all its eggs but one when it had the misfortune to fall in my way. Next day I took two men with me to the place, and began a systematic search for the nest. There were scarcely any trees in the neighbourhood, but many patches of rank rushes, and among these I hunted long without success. At last one of my men, who was on the other side of the stream, signalled to me and pointed to a hole in the bank, which at that part was quite perpendicular. I crossed, and, looking into the hole, found sixteen eggs which exactly matched the one taken out of the body of the bird. They were lying on a bed of twigs and quill feathers of some large bird, with a little lining of down and some fragments of a snake's skin. The hole was about five feet from the ground and two feet deep, the entrance being about nine inches wide by six deep. The hole went into the bank quite horizontally, and there was nothing in the way of a ledge to alight on at the entrance, so the bird must have popped in as a pigeon does."

The nest is generally composed of dead leaves and grass on a foundation of a few sticks. The eggs vary in number from eight to fifteen or twenty, and, in one remarkable instance mentioned by the late Mr. A. Anderson, they numbered forty. In shape many of the eggs are regular ellipses, others are slightly more pointed at one end than at the other. They are remarkably smooth, and they have a large amount of gloss when first laid. In colour they are creamy white. They measure from 2·2 to 2·6 in length, and from 1·65 to 1·8 in breadth.

The male has the head and neck white, mottled with black, but more thickly on the crown than elsewhere. The mantle and the whole lower plumage are white, each feather, for some time after the autumn moult, having a narrow black margin. The sides of the body are pale grey; the axillaries black; the under wing-coverts black, with some of the central feathers margined with white. The upper back, the scapulars, the lesser coverts, and the inner secondaries are glossy blue-black. The primaries are plain black; the secondaries are dark brown on the inner web, metallic bronze-green on the outer. The greater wing-coverts are entirely bronze-green. The lower part of the back is grey; the rump, upper tail-coverts and tail black. The black of the upper part of the back is produced as a broad crescentic band on either side of the upper breast.

The female bears a close general resemblance to the male, but is much smaller, and differs also in having the metallic black portions of the plumage less glossy; the rump of the same grey colour as the lower back; the mantle brown with whitish margins; the under wing-coverts entirely black; and the sides of the body brown.

Many birds have the white lower plumage suffused with ferruginous.

Young birds, after the first moult, are brownish above and dingy white below.

Male: length about 30; wing 15; tail nearly 6. Female: length about 27; wing about 11½; tail rather more than 4. In both sexes, the bill is black; the irides dark brown; the legs and feet dark plumbeous. The comb of the male is black. Weight up to 5¾ lb.

THE WHISTLING DUCKS.

The Whistling Ducks comprise a number of species which are confined to the tropical parts of the world. Two of these are found within the limits of the Indian Empire, where they are resident.

In this group the sexes are quite alike in plumage, and they do not differ much in size. The Whistling Ducks have an autumn moult only. They have rather long, but slender legs; the wing is somewhat weak, the outer secondaries reaching considerably beyond the tips of the primary coverts, when the wing is closed; the bill is of equal width throughout; the plumage is rufous; the primaries, axillaries and under wing-coverts are all black. Consequently the Whistling Ducks can hardly be confounded with any other Indian Duck.

The species of this group nest almost entirely on trees, and they habitually perch, or rather stand, on the larger branches of these; their feet are not well adapted for grasping the small branches.

I am quite unable to follow previous writers in terming these birds "Teal." They have no resemblance whatever to the Water Fowl to which the name "Teal" is properly applied.

98. THE SMALL WHISTLING DUCK.

Dendrocycna javanica, (HORSFIELD).

Primaries uniformly black.
Axillaries and under wing-coverts black.
Upper wing-coverts largely maroon.
Upper tail-coverts chestnut.
No black band down the hindneck.

Sexes alike.

VERNACULAR NAMES :—*Silli*, *Silhali*, *Chihee*, Hind.; *Saral*, *Shareil*, *Harrali-Hans*, Beng.; *Hansrali*, Uriya; *Ade*, *Adla*, Mahrathi; *Yerra Chilluwa*, Telugu; *Yerrundi*, Malayalum; *Chemba Tara*, Tamil in Ceylon; *Saaru*, *Tatta Saaru*, Ceylon; *Horali*, Assam; *Tingi*, Manipur; *Sissalee*, Burma.

WITH the exception of the Himalayas, Kashmir and the Punjab, the Small Whistling Duck is to be found in all suitable localities throughout the Indian Empire, from the base of the Himalayas to Ceylon on the one hand, and from Assam to Tenasserim on the other. It occurs also in the Andamans and Nicobars.

Eastwards, Lieut. J. H. Whitehead informs me that he has observed this species at Kengtung, so we may presume that it is found all over the Shan States.

This species is commoner in Bengal and the eastern part of the Empire than in any part of the peninsula of India.

This Duck has a considerable range, being found in China, Siam, Cochin China, the Malay peninsula, Sumatra, Borneo and Java.

The Small Whistling Duck is a permanent resident in all parts of the Empire where it is found, but like all other Ducks it moves about to find suitable conditions. In many of the drier parts of India it is only found in the rainy season; in others it is rare, chiefly owing to the want of tree-jungle. In Burma, and apparently also in Bengal, these Ducks remain about the larger swamps in much the same numbers throughout the year, but of course in the breeding season they become scattered and attract less notice. By preference this bird frequents weedy ponds and marshes, but it is occasionally met with on rivers. It is not uncommon on small village tanks and ponds, and it may be seen on roadside drains and paddy-fields. It goes about in pairs during the breeding season, but at other times in flocks of all sizes, from half a dozen to many hundreds. It is tame and familiar unless very much harassed, and is very easily shot. When disturbed they often wheel several times round the intruder and quickly settle down again.

This Duck is very often observed perching on some large bough of a tree, especially during the nesting season, when the male sits for hours near his mate, who has her eggs in the vicinity. They are at all times fond of resting on trees, and many roost on them at night.

They are excellent swimmers and divers. They feed, however, on the surface chiefly, and they are quite as omnivorous as the domestic Duck. Their cry is a double whistle, and it is uttered both when rising and during flight, especially when wheeling round and round.

The nest of the Small Whistling Duck is placed in a variety of situations. In Lower Burma, although there were many suitable trees about, I found the nests invariably built on the thick, matted cane-brakes and bushes which are often allowed to grow between paddy-fields which have only recently come under cultivation.

Mr. Stuart Baker has, however, had a more varied experience than myself in connection with the nesting of this bird, and I shall therefore quote his remarks from the Journal of the Bombay Natural History Society. He says:—

"Normally and typically both our Indian *Dendrocycnæ* build nests on trees or lay their eggs in their hollows; often, however, they make use of the deserted nests of other birds, and sometimes they build nests on or near the ground in reeds, grass, or even bushes. The recorded and authenticated instances of the common 'Whistling Teal' laying its eggs in nests placed on the ground are not numerous. . . .

"Personally I have never seen a nest actually on the ground, but have taken one or two from situations very close to it. In Cachar, at the foot of the hills, there is much broken ground, often intersected by nullahs, which widen out here and there into swamps and bheels. Here the 'Whistling Teal' is in its element and has an enormous variety of sites to choose from. The one I have found most often selected is some clump of trees, generally babool or a stunted species of large-leaved, densely-foliaged tree which grows often actually in the water. When the rains are on, these small clumps form oases in the centre of a watery desert, and, when the floods are at their height, show merely a few feet of their crests above water, on one of which the ducks build their nest; a rough and ready construction of weeds, sun-grass and rushes, rarely lined with a few feathers. Sometimes a good many twigs are used, more especially when the nests are placed in babool trees, where, owing to the support being less compact, the nest itself is bound to be stronger and better put together. The situation next most often chosen as a site for the nest is up one of the arms of these bheels, which seldom, if ever, have deep water in them, but at the same time, from collecting moisture drained off the surrounding hills, are always wet and moist. In these places the canes, reeds and other vegetation grow to a great height, often twelve feet or more, and are so rank and tangled that their tops will bear no inconsiderable weight. When building the nest in one of these tangles the birds place it some two or three feet from the top, the density of which protects it greatly from rain, etc. The nest itself is of the roughest description, a mere thick, coarse pad of grass, reeds and perhaps a few creepers, measuring some 18″ to 24″ in diameter, and with no more depression in the centre than is caused by the birds constantly sitting in them.

"Now and then the nest is found on trees close by villages and near some tank or piece of water. When on this kind of tree the nest may be placed either on one of the bigger forks or in a large hollow; and when in the former place are quite well-built nests of twigs lined with grass and a few feathers. If, on the contrary, they are in the hollows, the nest is scanty and sometimes merely consists of the fragments naturally contained in the hole.

"In Rungpur, I found nearly all my nests on trees, though very often they were not built by the birds themselves, but they used old crows' nests sometimes, old kites' nests frequently."

The eggs of this Duck at times number as many as fourteen, but eight or ten is perhaps the most usual number. In shape they are either elliptical or broad oval, short and somewhat rounded. They are not quite so smooth as the eggs of many other species of Ducks, and they are but very slightly glossy. The colour is white or very pale cream. They measure from 1·7 to 2 in length and from 1·4 to 1·6 in breadth.

This bird seems to breed everywhere during June, July and August, but eggs have been taken sometimes during September and October.

The adult male and female have the forehead and crown fulvous brown, darker behind. The sides and back of the head are fulvous grey; the chin and throat paler. The neck is grey. The breast is pale orange-brown passing gradually into the chestnut of the abdomen and the sides of the body. The under tail-coverts are whitish. The mantle is light brown, the feathers edged with pale fulvous. The back and scapulars are dark brown, the feathers margined with bright rufous. The rump is black; the upper tail-coverts chestnut; the tail brown. The lesser and middle series of wing-coverts are maroon; the lower series or greater coverts, together with the long inner secondaries, are dark ashy. The other quills of the wing are all black. The axillaries and the under wing-coverts are black.

The young bird in first plumage is similar to the adult bird, but paler.

The sexes are of much the same size.

Length 16; wing $7\frac{1}{2}$; tail $2\frac{1}{4}$. The bill, legs and feet are brownish blue, the nail of the bill nearly black; the irides are brown; the eyelids bright yellow. Weight up to $1\frac{1}{4}$ lb.

99. THE LARGE WHISTLING DUCK.

Dendrocycna fulva, (GMELIN).

Primaries uniformly black.
Axillaries and under wing-coverts black.
Upper wing-coverts largely maroon.
Upper tail-coverts yellowish white.
A black band down the hindneck.

Sexes alike.

VERNACULAR NAMES:—The same probably as those given to the Small Whistling Teal.

THE Large Whistling Duck is altogether a less common bird than its ally, the Small Whistling Duck, but, like it, is found over nearly the whole of the Indian Empire.

On the north-west it extends to Sind, where it has been found breeding, and to Bhawulpur in the Punjab. Its northern limit appears to be the Himalayas. Thence it ranges south throughout the peninsula in a somewhat irregular manner, fairly common in some parts, absent in others, to the extreme southern point of

India, and Mr. H. Parker many years ago recorded this species from Ceylon.

This Duck is perhaps more frequently met with, and in larger numbers, in Bengal than elsewhere. It extends through Assam. Mr. Eden procured it in Sylhet. Captain T. S. Johnson obtained it near Mandalay. I observed this Duck in many parts of Lower Burma, notably on the Engmah swamp, south of Prome. Colonel Wardlaw Ramsay got it at Toungoo. Finally, Major G. Rippon informs me that it occurs on the large lake at Fort Stedman, in the Southern Shan States. It may be concluded that this large Whistling Duck occurs over the whole tract of country extending from Assam to the sea-coast line of Pegu. It has not yet been observed in Tenasserim.

Outside our limits this species is found over a large portion of Africa, in Madagascar, and in Central and South America.

When I used to meet with this bird, many years ago, I could not detect any point of difference between its habits and those of its smaller relative. The larger bird was perhaps a trifle less easy to shoot, being more wary and getting away quicker. Mr. Stuart Baker is better acquainted, however, with these Ducks than I am, and I will therefore quote what he says about them:—"They are wilder birds than their smaller cousins, and also stronger and quicker on the wing; indeed, when once well started they are no mean fliers, and require a straight gun to knock them over. One cannot well describe the difference in the voice of the two 'Whistling Teals'; but it is recognisable, and I think consists in the bigger bird having a shriller whistle than the other, though it is not such a noisy bird. I doubt if they perch as much as *D. javanica* does; the latter bird often takes to trees in the day-time without any apparent purpose except to rest, but *D. fulva* does not seem to do this. Of course both birds, when perching, choose large boughs and branches, as they have no great grasping power and could not retain their hold on small ones, especially if there was any wind to sway them about. As Hume remarks, this 'Whistling Teal' is far more often seen on land than is the smaller species, and he also notes their goose-like gait. Their legs are, as we all know, set forward much as are those of geese, and in consequence they naturally walk freely and well as do those birds. I have noticed them resting during the heat of the day on the spits of grass-covered land which run far out into the larger bheels. One or two observers have said they are more river and clear-water frequenters than are others of the genus, but this I have not myself confirmed. Every large bheel and expanse of water which had cover on it contained more or less of these birds, and many a tiny tank or rush- and weed-covered backwater held its flock; but I have never yet met with them on the open rivers of the Ganges and Brahmapootra, though I have visited them often, and though these run through their favourite haunts."

The Large Whistling Duck apparently always constructs its nest on trees, most frequently on a branch, but sometimes in a hollow. The nest is described by Mr. Stuart Baker as being about eighteen inches across and constructed of twigs, sticks, and grass, and sometimes lined with weeds. He tells us:—"The normal shape of the egg is a very broad regular oval, but little smaller at one end than the other. Abnormal eggs are generally longer in shape, but I have seen none at all pointed. They are fine and smooth in texture, but inclined to be chalky and not very close grained."

The eggs measure from 1·85 to 2·4 in length, and from 1·6 to 2 in breadth.

The adult male and female have the forehead and the crown of the head ferruginous brown. The sides of the head and neck and the throat are fulvous, streaked with pale brown. The chin is plain fulvous. A broad black band occupies the hindneck. A portion of the foreneck is covered with short pointed black feathers with white tips. The back and scapulars are black, each feather with a broad rufous margin. The rump is black; the upper tail-coverts yellowish white; the tail dark brown. The quills of the wing and the coverts are black, except the lesser and the middle series of coverts, which are dull maroon. The breast, the abdomen, and sides of the body are pale chestnut. The under tail-coverts are yellowish white. The under wing-coverts and the axillaries are black. The longer feathers of the flanks are a mixture of pale buff, chestnut and black, disposed longitudinally.

The sexes are of much the same size. Length about 20; wing 9; tail 2½. The bill, legs and feet are more or less dark plumbeous; the irides are brown. Weight up to about 2 lb.

THE COTTON-TEAL.

THE Indian Cotton-Teal is the smallest of all the Indian Ducks, and is a widely distributed and well known bird. The drake has two regular moults in the year, one in spring, and one in autumn. In summer plumage the sexes are conspicuously different, but in the winter they resemble each other closely, the male, however, retaining the large white patch on the primaries, by which he may be known when flying. These Ducks have no brightly-coloured speculum, but the conspicuous broad white tips to the secondaries form a feature in their plumage.

The bill in these small Ducks is very short, and narrows gradually from the base to the tip. The legs are short and the toes long, characters denoting great diving powers. The Indian Cotton-Teal is the only small Duck found within our limits with dark axillaries, and it consequently cannot ever be mistaken for any other Teal occurring in India.

There are several Cotton-Teal, but it is highly improbable that any other species will ever be found to occur within our limits, even as a straggler.

100. THE INDIAN COTTON-TEAL.

Nettopus coromandelianus, (GMELIN).

Axillaries entirely black or else brown margined with grey.
Nearly all the secondaries broadly tipped with white.
Crown with a dark cap.

MALE: **With a large white patch on the primaries.**

FEMALE: **With the primaries entirely blackish.**

VERNACULAR NAMES:—*Girri*, *Girria*, *Girja*, *Gur-gurra*, Hind.; *Ghangariel*, *Ghangani*, Beng.; *Bullia-hans*, Dacca, Faridpur, Sylhet; *Dandana*, Uriya; *Lerreget-perreget*, *Merom-derebet*, Kol.; *Ade*, *Adla*, Ratnagiri; *Kalagat*, Burm.

THE Indian Cotton-Teal occurs in greater or less abundance over almost the whole Indian Empire, from the base of the Himalayas to the extreme south of the peninsula, and in Ceylon; and from Assam down to Tenasserim, including the Andaman Islands. This small Duck has not yet been observed in Kashmir, in Sind, or in Cutch, and probably these tracts lie outside its range. It appears to be more abundant in Bengal and the eastern portion of the Empire than in the peninsula of India itself. With regard to its southern and eastern limits, this Teal will no doubt be found to occur to the extreme confines of the Empire, but up to the present it has not been recorded from any point in Tenasserim farther south than Tavoy; nor from any point further east in the Shan States than Kengtung, where my friend Lieutenant J. H. Whitehead recently procured it.

For a resident species of Duck the Indian Cotton-Teal has rather a wide range, being found in China, Siam, Cochin China, the Malay Peninsula and the islands, to the Philippines and Celebes.

The Cotton-Teal affects every description of water, from the tiny ditch or pool to the large swamp, but they are not partial to clear water; they almost invariably choose water covered with weeds. In many places they are remarkably tame and confiding, and they can often be approached within a few yards. They are found in twos or threes, and sometimes in small scattered flocks, but never in very large numbers. Their flight, when once up, is remarkably swift, and they twist round corners in a wonderful manner. They do not, as a rule, fly far, but quickly settle down again. Although these Teal are surface-feeding birds, they dive with great facility, and wounded birds are generally lost. The Cotton-Teal is chiefly a day-feeder. It frequently perches on the larger branches of trees, and generally roosts on them at night. The cry of this little bird is a rather loud, chuckling cackle, uttered when flying.

Mr. Stuart Baker thus explains how such vast numbers of this Teal come to be caught near Calcutta, and to be brought to the market, throughout the cold weather :—

"In certain of the drier portions of its habitat this bird is semi-migratory in its habits, only visiting them in the rains, and leaving again for some more suitable place as the haunts in the former begin to dry up. Hume, talking of the vast numbers seen every day during the cold weather in the Calcutta market, says that it is a mystery to him where they come from. Having myself shot over some of the vast bhils and backwaters of the

Ganges and Brahmapootra, I think it would take a very large number indeed to surprise me. In the places mentioned they simply swarm in thousands, and are only outnumbered by the 'Whistling Teals.' I suppose every one knows how the fishermen of the Sunderbunds and other parts net the vast numbers of Duck that are daily sent in to the Calcutta market, but in case there are some who do not, the following may explain. Over a great stretch of shallow bhil they erect nets some fifteen or twenty feet high, usually selecting the end of a large patch of water where it narrows off either into dry land or again widens out into yet another bhil. Then, by night, they pole silently up the lake towards the nets, driving the flock of duck and teal silently before them, nor is any noise made until an approach has been made to within some two hundred yards, or even less of the nets. Thus, when the shouts are raised, many of the flocks have not time to rise high enough to evade the nets, into which they fly and are entangled. Cotton Teal, of course, fly low along the surface of the water, and hence fall victims to the nets more easily than such Ducks as get quickly into the air and fly high."

The Cotton-Teal breeds throughout the rains, and nests may be found at any time from June to September, the month varying, no doubt, according to locality. In Burma I found a nest in September, and probably, in this particular case, the birds had had an earlier brood. In Ceylon they are said to breed in the early part of the year.

The nest seldom consists of anything more than a few twigs and feathers, and very frequently the eggs are laid in a hollow without any preparation. The site selected is a hole in the trunk of a tree or in a big branch; sometimes a hole in an old ruin, or even in a chimney, but seldom at any great height from the ground; although the only nest of this species that I ever found in Burma was about thirty feet from the ground.

Mr. F. R. Blewitt tells us that this Teal makes a semi-floating nest on the water, among the rushes or lotus-leaves, of weeds, grass, etc., filled up several inches above the water-level. This was on a lake near Jhansi. I have heard of no other instance of this bird making a nest on the water.

Ten is perhaps the most usual number

of eggs laid in one nest, but fewer are frequently found, and in two instances quoted by Mr. Stuart Baker, the large number of twenty-two was taken from one nest.

The eggs are elliptical or nearly so, very smooth, and with a considerable amount of gloss. They are of a cream colour, and measure from 1·5 to 1·8 in length, and from 1·15 to 1·4 in breadth.

The adult male in summer plumage has the forehead blackish and the crown brown, this latter part more or less surrounded by a blackish band. The remainder of the head, the whole neck, the upper part of the mantle and the lower plumage are pure white. The sides of the body are beautifully vermiculated with brown. The under tail-coverts are black, with white bases. The axillaries and the under wing-coverts are black. A broad black collar surrounds the lower part of the neck. The back, the scapulars, all the upper wing-coverts, and the inner long secondaries are black glossed with purple and green. The primaries are black at the base and tip, white in the middle, the latter forming a conspicuous white patch. All the secondaries, except the long inner ones, are black with broad white tips, the outer webs glossed with green. The rump is black, and the upper tail-coverts white, closely vermiculated with brown, like the sides of the body. The tail is dark brown.

The adult female, at all seasons, has the forehead, and a band over the eye, dull white mottled with brown. The crown of the head and a band through the eye are dark brown. The sides of the head, the chin and the throat, are greyish white, slightly mottled with brown. The neck and the upper part of the breast are dull white, barred with brown. The mantle is dark brown, freckled with grey. The back, the rump, the scapulars, and the whole of the upper wing-coverts are dark brown, the coverts slightly glossy. The primaries are blackish, the inner ones tipped with whitish. The short secondaries are black, broadly tipped with white; the long inner secondaries are entirely brown. The upper tail-coverts are light brown more or less tipped with grey; the tail dark brown. The entire lower plumage is dull white, the dark bases of the feathers more or less visible. The axillaries are brown margined with grey, and the under wing-coverts are brown tipped with dull white. The sides of the body are brown.

The male in winter plumage resembles the female in general appearance, but retains the white patch on the primaries and the brilliant gloss on the outer webs of the secondaries and on the wing-coverts. The axillaries and the under wing-coverts are black as in summer. The black collar is wanting.

The first plumage of the young birds of both sexes resembles that of the adult female; and the young male completes the change into adult male plumage in the first spring. In a young January bird the white on the primaries is only half developed, but the wing-coverts are as glossy as in the adult male.

The female is slightly smaller than the male. Length about 13; wing 6½; tail 2½. The male in summer has the bill black; the irides bright red; the legs black. In winter, the upper mandible becomes brownish and the lower yellowish. The female has the bill brown above, yellowish below; the irides brown and the legs yellowish. The male weighs up to nearly 11 oz.

Near the Cotton-Teal should be

placed the Mandarin Duck, *Æx galericulata*, from Southern China. This beautiful Duck is not unlikely to be met with on the borders of the Northern Shan States. It is rather larger than a common Teal, and may be recognised at all ages, and, in the case of both the sexes, by the brown axillaries, the broad and conspicuous silvery grey margins of all the primaries, and by the bright, but ill-defined, metallic purple speculum, this colour extending over three or four secondaries. The male, in full plumage, is a gorgeous creature with a long crest, a number of long, narrow, chestnut feathers on the neck, and with a very remarkably-formed inner secondary. This feather is fan-shaped and quite three inches wide at the end. The inner web is chestnut, and the outer purple. The female, which is of plain plumage, may be separated from similarly plumaged young males, and from males, indeed, of all ages and in all phases of plumage, by the oblique white stripe which may always be found on the outer web of the first purple feather of the speculum. This stripe is just below the tips of the wing-coverts, and is always absent in the male.

THE WOOD-DUCKS.

Few Ducks are so little known as the Indian Wood-Duck. The Hume Collection contains but one specimen, and notes on the habits of this species are very imperfect.

After a careful investigation, I agree with Messrs. Hume and Marshall that the Indian Wood-Duck is distinct from the Wood-Duck of Java. The former has the head and neck white, spotted with black; the latter has these parts pure white, in addition to having a good deal of white on other parts of the body. These facts appear to me to be well established, both by the evidence of actual specimens and also by the descriptions of the older writers.

The changes of plumage of these Ducks, and the distinctive garb of the sexes, cannot yet be satisfactorily worked out, owing to the paucity of specimens. With regard to the Indian species, I have described the plumage of a fine mounted specimen in the galleries of the British Museum, from Mergui, as that of the adult male. A specimen in the Hume Collection from Assam is sexed as a female. It is, however, in a transitional stage of plumage, with the feathers of the breast undergoing a change from chestnut-brown to black. This is evidently a young bird, but I cannot but regard it as a young male, changing from its first plumage, that of the adult female, into that of the adult male. On this assumption—and it is difficult to arrive at any other conclusion—it may be inferred that the female bird has the breast of the same dull chestnut-brown as the abdomen, whereas the adult male has the breast black and the abdomen chestnut-brown. The acquisition of further specimens, properly sexed, is necessary before the matter can be finally settled.

The Wood-Ducks are large, heavy birds. The legs are short, but rather slender. The feet are large, the middle toe being much longer than the tarsus. The wings are large, but not well adapted for rapid flight, the secondaries being extremely long and soft. These Ducks are resident in the localities they frequent, and probably they use their wings with reluctance.

The bill is large and of much the same shape as that of the domestic Duck.

When swimming, the Indian Wood-Duck should be easily recognisable by its white head, white upper wing-coverts and dark body-plumage. These Ducks may not be so rare as is generally imagined, but they appear to frequent forests, where few sportsmen would expect to find Ducks.

101. THE INDIAN WOOD-DUCK.

Asarcornis leucoptera, (BLYTH).*

Primaries uniformly black.
Axillaries white.
Speculum slaty-blue; wing-coverts white; separated from each other by a broad black band.
Head and neck white, spotted with black.

MALE: **Breast black, lower plumage chestnut-brown.**
FEMALE: **Both breast and lower plumage chestnut-brown.**

VERNACULAR NAMES:—*Deo-hans*, Assam.

THE Indian Wood-Duck is probably found throughout the whole eastern portion of the Empire, from Assam to Tenasserim, but the localities where it has been actually obtained are few in number.

First, I may quote Colonel Godwin-

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* *Asarcornis scutulata* (part.) of the British Museum Catalogue.

Austen. He says:—"I got this bird at Dimapur on the Dunsiri river; it appears to prefer sluggish streams like this flowing through forest, for I once flushed this bird in such a haunt in the interior of the Garo Hills. I am informed by Mr. James, of the Police at Samaguting, that it breeds on the Dunsiri, and that he had shot the young birds. It is called the 'Deo-hans' in Assam. Mr. J. Burt, of Tezpur, informs me that the white-winged Sheldrake perches on trees, and that one was killed thus sitting by Mr. J. Martin of Paniputa tea plantation, near Tezpur."

In the "Birds of India," Jerdon wrote:—"This fine Duck has hitherto been only procured in Burmah, but I have received information of a so-called 'Black Goose' occurring in Dacca and other parts of Eastern Bengal, which, from the description, can be no other bird." Subsequently, he wrote to Mr. Hume a note on this bird, of which I here reproduce a portion. He said:—"I have seen several flocks of *Casarca leucoptera* in the lower part of the Brahmaputra, where it joins the Ganges, not far above Dacca, where, indeed, Simson had seen it."

Mr. F. B. Simson, however, in an

interesting paper on the birds found in Eastern Bengal, referring to this statement of Jerdon's, says (*Ibis*, 1882, p. 92):—"Jerdon informed Hume that I had observed *Anas leucoptera* to the east of Dacca; but I never saw it, nor have I ever seen a skin of it yet. I told Jerdon that I had *heard of* a large flock of dark Ducks in these waters, but had never met them myself. Jerdon himself only observed it from the deck of a steamer."

Mr. Hume's collectors obtained a specimen of this Duck at Dollah, at the extreme east of the Assam valley.

Colonel Graham, as quoted by Messrs. Hume and Marshall, informs us that this Duck is rare in Darrang, but common in the vast pathless tree jungles of Lakhimpur.

Mr. J. R. Cripps writes:—"This, hitherto rare, Wood-Duck is commoner in the Dibrugarh district than is supposed, but, from its retiring habits and the nature of the country it affects, is seldom seen. It is a permanent resident, frequenting lonely, weedy *pathars* in dense forest, and far away from villages. Food, principally vegetable matter with a few small pieces of pebble."

Mr. E. C. Stuart Baker tells us that

Mr. W. Moylan shot this bird in Singbhoom, Eastern Bengal. He writes:—"Mr. Moylan, in narrating to me how he met with this Duck in Sini, in Singbhoom, said that they were shooting in grass-covered swamps at the edge of heavy forest. They were standing at the edge of this forest when he saw four birds, which he took to be geese, coming down towards him and his companions. They were at a great height, but a charge of S. K. G. shot took effect on the foremost, and he came crash to the ground, turning out to be a fine drake. It is possible that Mr. Moylan may have been wrong in his identification, but I failed to discover any reason to make me think so, though I questioned him closely on the matter. This was the only occasion on which he ever saw the Duck."

Mr. Stuart Baker himself found these Ducks in the Barpeta part of the Kamroop district. He observes:—"When I saw the pair in Barpeta, I was shooting Kya Partridge in the ekra-covered patches of swamp in the forests, and a pair got up some forty or fifty yards from me from some swamp just as I emerged from the forest. Two barrels of No. 7 pattered on their backs at once, but seemed not to have the smallest effect on them. These two birds flew just like geese, one bird (the male, I suppose, for he looked much the heavier) about ten yards in front of the other, their necks fully outstretched and squawking loudly as they flew for the first few hundred yards. Whilst in the open they flew within a few feet of the ground, but, on regaining the forest, mounted higher until they disappeared altogether in the distance."

Mr. Baker also met with these Ducks in Cachar. He remarks:—"The only experience I have had personally with them in this district was on a rainy day in June: when out shooting I heard two birds calling to one another in loud goose-like calls. The forest was very dense, and consisted almost entirely of trees, but through it there wandered a sluggish, dirty stream, which here and there disappeared into small morasses dotted with tiny pools of clear water. Thinking the safest way to get a shot would be to drive them, I sent my Cachari tracker to beat down the stream towards me from a point some two hundred yards or so above where we heard them calling. The drive proved a total failure, as though the birds flew within thirty or forty yards of me they kept inside the forest on the same side of the stream as that on which I was seated, and I hardly caught a glimpse of them, much less obtained a shot. The Cachari told me that when he came on the first one it was in a tree, from which it did not fly until he was underneath, and that then it made off to its mate, which was some two hundred yards higher up the stream. They then both settled in a small pool, and did not again take to wing until he had sneaked to within twenty yards, when they got up and flew straight away, passing, as I have already said, just out of sight of me. We heard them calling two or three days after this, but when I attempted to stalk them they made off long before I got within sight or shot of them."

I have never been able to meet with, or even hear of, this Duck in any part of Upper Burma or Pegu. It has been obtained, however, at Tavoy and Mergui, in Tenasserim, and lower down in the Malay Peninsula, at Poonga, Kussoom and Kopah.

The mounted specimen of this Duck in the British Museum, from Mergui, which from its large size is probably an adult male, has the head and neck white, much spotted and mottled with black. The lower neck, the sides of the breast, and the breast itself, are glossy black. The abdomen and the sides of the body are dull chestnut-brown, the under tail-coverts dusky rufous. The mantle, the upper scapulars, the back, rump and the upper tail-coverts are dark olive-brown, each feather margined with metallic black. The lower scapulars are plain olive-brown. The upper wing-coverts are white except the lower series, the feathers of which are slaty-blue at base, and black at the tip, the slaty-blue portions being concealed by the white coverts, and the black tips forming a broad band across the wing. The primaries are blackish. The outer secondaries are brown on the inner web, slaty-blue on the outer. The secondary next to these has a portion of the outer web white with a black margin. The inner and longer secondaries are olive-brown. The tail is dark brown. The axillaries are pure white, and the under wing-coverts almost entirely white.

The female apparently differs from the male in having the breast of the same chestnut-brown as the abdomen.

Male: length about 32; wing nearly 15; tail about 6½. The female is smaller than the male. Mr. Cripps records one as measuring rather more than 29 in length, with a wing of about 13½. The bill is orange-yellow, blotched with black in part; irides crimson; legs and feet orange-yellow. Weight up to about 6½ lb.

THE GREY DUCKS.

THE group of Grey Ducks comprises two species of Indian Ducks which are usually united to the True Ducks; the Grey Duck being associated with the Wild Duck, and the Andaman Duck with the Common Teal.

The Grey Ducks differ from the True Ducks in so many important respects that I am obliged to regard them as a very distinct group. They have given up their migratory habits and have become localised. As a consequence, they require to fly less, and the wing is therefore more blunt than in the True Ducks, as indicated by the greater length of the outer secondaries, the tips of which, in the closed wing, reach to the tips of the longest primary coverts. The lengthening of the outer secondaries in the Grey Ducks causes the speculum to be very large. The primaries, instead of presenting the peculiar pattern observable in the primaries of the True Ducks, are blackish throughout. The sexes are quite alike, and the male is clothed in the sombre plumage of the female, although both sexes exhibit the brilliant speculum so characteristic of both sexes of many species of True Ducks. Inasmuch as the drake resembles the duck, there is no necessity for a post-nuptial moult, and there is no evidence to show that the drakes of the Grey Ducks have any but the ordinary autumnal moult.

The plumage of the Grey Ducks is more or less spotted. The bill resembles that of the domestic Duck, and is of equal width throughout its length.

In this group should be placed the Chinese Grey Duck (*P. zonorhyncha*), which may probably be found in the eastern parts of the Shan States.* It resembles the Indian Grey Duck, but may be distinguished by the following characters. The bill is black, with the tip of the upper mandible alone yellow. The speculum is brilliant metallic blue, and there is a double band of black and white below it. Above the speculum, however, instead of a similar double band, as in the Indian Grey Duck, there is but a single band, of a black colour. Instead of the outer webs of the two long secondaries next the speculum being entirely white, these webs exhibit hardly any white. The Chinese Grey Duck has a wide range, extending from Japan down to China. It is a resident species, but its southern limits are not definitely known. There is no other Grey Duck likely to occur within the limits of the Indian Empire.*

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* As this is passing through the press I see in the "Asian" (January 10th, 1899), that a correspondent states that he has shot Spotbill Ducks, which he terms *zonorhyncha*, at Kengtung, in the Shan States.

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* There is no genus in which the Grey Ducks can be placed, and I therefore propose the name *Polionetta* for them, with *Polionetta pœcilorhyncha* as the type of the genus.

102. THE GREY DUCK.

Polionetta pœcilorhyncha, (FORSTER).*

Primaries nearly uniformly blackish, the inner webs being slightly paler than the outer.

Under wing-coverts and axillaries white.

Speculum metallic green or greenish blue, between two double bands of black and white; the outer web of the two long secondaries next the speculum white.

Tip and base of the upper mandible yellow or orange.

Sexes alike.

VERNACULAR NAMES:—*Hunjur*, Sind.; *Garam-pai*, *Bata*, *Gugral*, Hind.; *Naddun*, Nepal Terai; *Neer-bathoo*, Tamil; *Neer-kolee*, Canarese; *Dodsarlé-haki*, Mysore; *Kara*, Manipur; *Tau-bay*, Burmese.

THE Grey, or Spotted-billed, Duck, occurs as a resident, and more or less abundantly, in every part of India, from the base of the Himalayas down to Cape Comorin, and in Ceylon. It has not yet been observed in Kashmir, nor in any portion of the Himalayas. Eastwards, this Duck extends through Assam ; and in a southerly direction, through Sylhet, Cachar, and Manipur to Arrakan and Upper Burma. Captain F. T. Williams shot this Duck in the Chindwin river. It is found in the swamps and tanks near the banks of the Irrawaddy, quite down to Mandalay ; and Captain T. S. Johnson and party, during one Christmas week, obtained ten of these Ducks near Mandalay, out of a total bag of 562 water fowl, showing that it is by no means rare in that part. I obtained a specimen not far from Lashio, in the Northern Shan States. Major G. Rippon informs me that this species occurs in all parts of the Southern Shan States, and Lieut. J. H. Whitehead writes to me stating that he got the Spot-bill as far east as Kengtung. In these instances, I do not think that the Chinese Grey Duck has been mistaken for the Indian species. I did not observe this Duck in any part of Pegu, but Blyth records it from Tenasserim, where, however, it has not been met with in recent years.

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* *Anas pœcilorhyncha* of the British Museum Catalogue.

The Grey Duck is not known to occur anywhere outside the limits of the Indian Empire.

This fine Duck frequents ponds, tanks, and small lakes by preference, but is also to be found at times in streams and on the larger rivers. It prefers well-wooded and reed-margined pieces of water to any others. When ponds dry up in one part of the country, it proceeds to another part, and it is only in this sense that the Grey Duck can be termed migratory. It is found, as a rule, singly or in pairs, but on large pieces of water flocks of from twenty to eighty may be observed. This Duck is not at all shy, and is frequently to be seen quite close to villages; and I once shot one in a small drinking-water tank, not more than forty yards square, close to a monastery, where the villagers were in the habit of coming all through the day to fill their water-pots. When on large pieces of water, they are not difficult to approach in a boat. They rise heavily, but fly swiftly when they are fairly off. When wounded, they dive very cleverly, and often escape capture, but they are also frequently drowned among the weeds. The food of the Grey Duck consists chiefly of vegetable matter, grain, grass, and the roots of water-plants, and also insects, worms, and small frogs.

With regard to the notes of the Grey Duck Messrs. Hume and Marshall observe :—"Their voices, both when chattering to each other when at rest or feeding, and when uttering their quacks of alarm, closely resemble those of the Mallard, but may always be distinguished by a somewhat greater sharpness ; they are not so sonorous, but they seem to be emitted with greater force."

Mr. Hume met with this Duck in Manipur, and found it so tame that it is worth while to quote his experiences. He says :—"This is *the* Duck of Manipur, common in every pond and jheel, and in many mere ditches fifteen or twenty feet wide, and excessively abundant and very tame on the Logtak lake. While the rest of the wild fowl at the lake were exceptionally wild, the Grey Ducks were tamer than I have ever seen them elsewhere. As a rule they only swam a little out of the way of the boats, and very seldom, if ever, dreamt of rising unless these approached within thirty yards of them. As I had a good many persons with me who eat wild fowl and were glad to get these, I daily, when at the lake, shot from six to ten Grey Ducks, but I *could* have shot twenty or thirty of these daily, all sitting shots, at distances between thirty-five and forty yards. Nay, sometimes a pair or two floating leisurely just outside some thin rush bed have allowed the boat to pass quite unconcernedly within even ten or fifteen yards."

There are few places apparently in the range of this Duck where it does not breed. The nest is usually placed on the bank of some pond or canal on the ground, among thick grass, and is composed of rushes, grass, and feathers, with a little down. Sometimes the nest is placed on a branch of a tree, drooping near the ground, and entirely concealed by the surrounding vegetation. In Sind, this Duck appears to nest in April and May; in the Punjab and the North-west Provinces in August; in Gujarat in October, and in Mysore in November. Probably it lays twice a year in most places.

Captain Woods communicated the following note to Mr. Stuart Baker regarding the breeding of this Duck in

Manipur:—"Here the birds generally pair about the beginning of April; but I have found a nest in a flooded *dhân khet* as late as October. The nests are composed of grass and feathers, the latter of which the parent birds pluck from their own breasts. I have found as many as fourteen eggs in a nest, though the usual number is ten. The parent bird sits very close when incubating, and when alarmed feigns injury to a wing, as do others of the family."

The eggs are short ellipses in shape, and measure about 2.15 by 1.7. When first laid, they are white or greyish white; after incubation, yellowish or brownish.

The adult has the forehead, the crown, and a band through the eye, dark-brown, streaked paler. A band over the eye, the sides of the head and the whole neck are dull white, minutely streaked with brown; the chin and throat similar, but with fewer streaks, sometimes streakless. The mantle, the sides of the breast, the lower plumage and the sides of the body are white or fulvous white, turning to dark brown on the lower part of the abdomen, each feather with a large roundish well-defined brown spot; the under tail-coverts black. The under wing-coverts and the axillaries are pure white. The upper back, the scapulars and the lesser wing-coverts are blackish, each feather with a pale fulvous margin. The lower back, the rump and the upper tail-coverts are black; the tail-feathers black, narrowly margined with fulvous. The greater wing-coverts are brown, terminated with white and broadly tipped with black. The primaries are blackish, the inner webs slightly paler than the outer. The outer secondaries have the inner webs brown, the outer brilliant metallic green or greenish blue, according to the light in which the wing is viewed, terminated by a broad black band and tipped with a narrower white band. The inner secondaries are dark brown, the first two longer ones, next the speculum, with the whole outer web pure white.

The young duckling, on assuming its first feathered plumage, resembles the adult, but has the spots on the lower plumage less distinct.

Male: length about 24; wing 11; tail rather more than 4. The female is rather smaller. The bill is black, the base of the upper mandible orange, the tips of both mandibles varying from yellow to orange;

the tip of the nail, black ; irides brown ; legs and feet bright red. In young birds the base of the bill, instead of being red, is brown, and the legs are orange. Weight up to 3¼ lb.

103. THE ANDAMAN DUCK.

Polionetta albigularis, (HUME).*

Primaries uniformly black.
Under wing-coverts black, with a median white patch.
Axillaries white.
Speculum black, divided into two portions by a longitudinal streak of metallic green or coppery bronze.

Sexes alike.

VERNACULAR NAMES :—None known.

THE Andaman Duck, or, as Messrs. Hume and Marshall term it, the Oceanic Teal, in the belief that this species had a very wide distribution, ranging from the Andamans to New Zealand, is strictly confined, not only to the Andaman Islands, but apparently to a very small portion of this group only. Mr. Hume discovered this Duck in 1873 during his memorable voyage to the Andamans, and it was observed by him and his party only on the coast and creeks of the South Andaman Island. It is improbable, however, that this little Duck should be so restricted in its range, and hereafter it may be found in the adjacent islands.

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* ***Nettion albigulare*** **of the British Museum Catalogue.**

Few persons have had an opportunity of observing this Duck. The late Mr. Davison thus described the habits of this species :—" This 'Teal' is said to have been very common, at one time, in the Andamans, but it is far from being so now. It appears to frequent alike both salt and fresh water. During the day it either perches among the mangroves or settles down in some shady spot on the bank of a stream ; when wounded it does not attempt at first to dive, but swims for the nearest cover, in which it hides itself; but when hard pressed it dives, but does not remain long under water, and appears to get soon exhausted. It feeds by night in the fresh-water ponds, and I was informed that it is to be seen during the rains in small flocks in the morning and evening in the paddy flats about Aberdeen. Sometimes in going up the creeks a pair will slip off the bank into the water, and keep swimming about twenty yards ahead of the boat, only rising when hard pressed, but they are very wary when in flocks. I could learn nothing about the breeding of this species. The only note I have heard them utter is a low whistle, and this apparently only at night when they are feeding."

Mr. Hume adds the following remarks: —"In the day time you commonly see them in pairs, occasionally in flocks of from twenty to thirty, high up in some densely mangrove-bordered creek, where the water is fresh; but at night they leave these, and collecting in moderate-sized flocks, resort to fresh-water ponds or paddy fields to feed. When wounded it sometimes dives most vigorously, not indeed remaining long under water, but by no means getting soon exhausted. On the contrary, it will often compel you to fire a second shot before you retrieve it. It swims well, and runs through the jungle at a great pace. Its flight appears to be fairly rapid, but they are seldom seen on the wing except at night, and then it is difficult to judge accurately of this.

"They are not, I should say, wild or wary birds; they do not leave a place at the first shot, and Davison has got as many as eight by successive shots out of the same flock, the birds flying about and settling again at short distances. But they are eminently birds of a retiring habit, and very soon abandon, as a day haunt, any place which civilised or semi-civilised men begin to frequent.

"A whole flock is sometimes seen during the day time perched on the mangroves of some salt-water creek; but they are certainly, by preference, the denizens of forest-embowered fresh water."

Mr. A. L. Butler, in the Journal of the Bombay Natural History Society, thus records his experiences with this Duck:—

"When I arrived at Port Blair in May, these 'Teal' were in good-sized flocks, resorting principally, at low tide, to two little rocky islets up the harbour, known as Bird Island and Oyster Island. I did not go after them at that time myself, not having a boat; a fair, though not large, number were killed by some of the officers stationed here. I believe eleven was the result of four barrels on one occasion! As the monsoon commenced and the harbour became rougher, at the beginning of June, these flocks of 'Teal' broke up into smaller parties of five or six to a dozen or so, and retired to the creeks and dyke-intersected marshes, a little inland, near Bamboo Flat and Port Mouatt. Towards the end of June these small parties commenced to break up into pairs; about this time I shot several, and in the paired birds I found the testes of the drakes enlarged, but the ovaries of the females were, as yet, in ordinary condition. In the 'Game Birds of India' Mr. Hume mentions a single nest being found in August, and I should think that August or the end of July would be the usual time of laying. I am afraid I am not likely to find a nest, as there are so many hundreds of acres of suitable breeding ground, and the birds are comparatively few.

"The 'Oceanic Teal' feed a good deal in the paddy fields at night; under cover of darkness, too, a few birds often drop into small tanks at Aberdeen within a few yards of bungalows and buildings. When in flocks they are very wild, but in pairs, on the small channels among the marshes, I found them very tame. I have often been able to creep up to the water's edge and watch a pair swimming quietly about within ten yards of me for some time. On one occasion I came right on to a pair under an overhanging bush, and they only fluttered, like waterhens, along the surface for twenty yards or so, then pitched and commenced swimming away, so that I was able to kill one on the water and the other as it rose, from where I stood. Of course birds that have been shot at a bit go clean away at the first alarm. On these creeks they associate with the common 'Whistling Teal,' and I have watched the two species in close company on the water, though the 'Oceanic Teal' separate from the others when put up. The only thing I noticed about them, which I do not think has been recorded, is that they have a 'quacking' note as well as a low whistle. One day a party of eight or ten, at which some shots had been fired, after wheeling round and round overhead for some time, pitched on a narrow channel, within thirty yards of me, as I stood concealed in the bushes on the bank. I watched them for some minutes, when another pair, frightened by some distant shots, came scurrying over: the birds on the water all twisted their heads up and set up a loud rapid quacking call-note which they kept up for some minutes; the newcomers circled round several times, but probably seeing the top of my *topee*, concluded not to join their companions in their fancied security. The flight of this 'Teal' is fairly fast; occasionally when they have been kept on the wing for some time a party will stoop down to the surface of a creek as though they meant to pitch, and then change their minds and rise again. When executing this manœuvre they rush past at a tremendous pace. The broad white wing-bar, in this species, is most conspicuous when the bird is on the wing.

"Winged birds promptly swim for the nearest cover, into which they scuttle off at a great pace, and are generally lost without a dog. One I shot swam steadily along in front of a Pathan convict who was swimming after it in the capacity of a retriever, and though hard pressed made no attempt to dive till it reached the bank, where it was caught. One of the officers stationed here has a live bird in captivity which was pinioned by a shot some months ago. It thrives well on paddy, but has not become very tame. It spends most of the day asleep, with its head resting on the plumage of the back. The local sportsmen have christened them 'Gibberies.'

"They are rather difficult birds to skin, being very fat, and having, for a Duck, rather a tender skin. They seem to average about 15 oz. in weight."

A single egg of this species was taken by Captain Wimberley in August. The nest was composed of grass and was placed in a paddy field. The egg is described as being a broad oval in shape, with a smooth shell, devoid of gloss, and of a delicate cream colour. It measured 1·93 by 1·43.

The forehead and crown are dark-brown, becoming paler and greyish-brown on the hindneck. The whole lower, and the edge of the upper, eyelid are covered with small white feathers. The sides of the head are mottled with dark-brown and fulvous. The chin, the throat, and the foreneck are white; the cheeks, the lower part of the sides of the head and also the sides of the neck are dull white, mottled with fulvous. The mantle, the back, the scapulars, and the upper tail-coverts are brown, each feather with a narrow rufous margin. The feathers of the rump are dark-brown, with hardly a trace of paler margins. The tail is plain brown. All the small upper wing-coverts are dark-brown; the greater coverts white, with a buff tinge, forming a conspicuous patch or bar above the speculum. The primaries are uniformly black, both webs of the feathers being of quite the same shade. The first secondary is brown with a broad white margin on the outer web; the succeeding shorter secondaries are brown on the concealed inner web, black with a slight greenish gloss on the outer web, except two or three feathers in the middle of the black patch thus formed, which are of a brilliant green or coppery bronze on the outer web. All these secondaries are also tipped broadly with pale buff. The longer inner secondaries are pale brown. The whole lower plumage and the sides of the breast and body are dull rufous, each feather with a large round brown spot; these spots being very distinct on the breast, but somewhat blurred on the other parts. The axillaries are pure white, and the under wing-coverts are black with a white patch in the middle of the lower margin.

In the large series of this Duck in the British Museum, there are three specimens which exhibit a certain amount of white on the face. A pair, shot in May, have a considerable space round the eye white, and they have also a patch of white on either side of the base of the upper mandible, and some white marks between these patches and the eye. A third bird, a male shot in December, resembles the above pair, but has, in addition, an indistinct white band behind the eye.

Male: length about 17; wing nearly 8; tail 3. Female: length nearly 16; wing 7¼; tail 2¾. The bill is plumbeous, the lower mandible tinged with pink in some cases; irides reddish brown; legs and feet plumbeous, the webs darker. Weight up to 1 lb.

THE TRUE DUCKS.

The True Ducks, as restricted by me, consist of migratory species in which the sexes are, for a great part of the year, differently coloured, but in which the drake assumes a summer, or post-nuptial, plumage greatly resembling that of the duck.

The pattern presented by the primaries. and the colour of the axillaries and under tail-coverts, will suffice to separate the True Ducks from all other Indian Ducks, except the Grey Ducks, and they may be separated from these by the length of the secondary quills of the wing, or in other words by the bluntness of the wing.

Of the nine True Ducks found in India, no less than seven are well-known English species, and two are Asiatic, occasionally straggling into Europe. There are no other Ducks of this group at all likely to occur in India.

The True Ducks have been divided into several minor groups by characters of more or less importance, which may here be noticed.

THE TEAL (*Nettium*).—The bill is of uniform width throughout. The male has the head banded with brilliant colours; the scapulars and inner secondaries lengthened, pointed and distinctively coloured. The speculum, composed of black and green, is the same in both sexes.

THE GARGANEYS (*Querquedula*).—The bill is rather wider near the tip than at the base. The male is not brilliantly coloured, and differs from the males of all the other True Ducks in not having the under tail-coverts black. The scapulars in the male are long, pointed and distinctively coloured. The speculum is not very dissimilar in the two sexes.

THE FALCATED DUCKS (*Eunetta*).—The bill is of equal width throughout. The male has the head brilliantly coloured; the inner secondaries long, narrow and sickle-shaped (falcated); and the lower and upper tail-coverts long, reaching to the tip of the tail. Both sexes have the speculum quite the same, and both have a conspicuous crest.

THE WIGEONS (*Mareca*).—The bill is

narrower near the tip than at the base. The sexes differ greatly, not only in general colour, but in the colour of the speculum. The male has the scapulars and inner secondaries lengthened and pointed.

THE PIN-TAILS (*Dafila*).—The bill is distinctly wider near the tip than at the base. The sexes are very different, both in general colour and in the colour of the speculum. The male has the middle tail-feathers greatly lengthened. The scapulars and the inner secondaries are also much lengthened and pointed.

THE GADWALLS (*Chaulelasmus*).—The bill is of uniform width throughout. The sexes do not differ much in colour, and they both have a large white patch on the wing, on the inner side of the speculum. The male has the inner secondaries long and pointed. The lamellæ of the upper mandible are very prominent, and project well over the lower mandible.

THE SHOVELLERS (*Spatula*).—The bill is double the width near the tip that it is at the base. The lamellæ of the upper mandible are very prominent, and project well over the lower mandible. The speculum is the same in both sexes, or nearly so; otherwise the duck differs considerably from the drake. The latter has the scapulars and inner secondaries lengthened and pointed.

THE WILD DUCKS (*Anas*).—The bill is of equal width throughout. The sexes differ greatly, except in respect to the wing and speculum. The male has the four middle tail-feathers curled up. The scapulars and inner secondaries are not much developed.

The True Ducks get their food at or near the surface of water; they do not dive, except when wounded or pursued. When searching for food in shallow water, they immerse the head, neck, and front half of the body, showing only the hinder part of the body above the surface of the water, in a vertical position.

The wing of the True Ducks is long and pointed. They fly with great speed, and they are able to launch themselves into the air at once from the land or from the surface of the water without running or splashing.

104. THE COMMON TEAL.

Nettium crecca, (LINNÆUS).

Outer web of the primaries blackish; inner web drab, with a blackish tip.
Axillaries white, with a brown tip.
Wing under eight inches in length.
Shafts of primaries brown.
Greater upper wing-coverts tipped with white, the tips of the inner feathers sometimes tinged with buff.
Speculum formed by two *longitudinal* bands, the outer black, the inner metallic green.

MALE: Crown and sides of head rich chestnut.

FEMALE: Head streaked with brown; no oval buff spot at the side of the base of the upper mandible.

VERNACULAR NAMES: — *Murghabi*, *Chota-murghabi*, *Kerra*, *Lohya Kerra*, *Putari*, *Souchuruka*, Hind.; *Kardo*, Sind.; *Baigilagairi*, Nepal; *Naroib*, *Tulsia-bigri*, Bengal; *Killowai*, Madras; *Sorlai-haki*, Canarese.

THE Common Teal visits almost every part of the Empire in the cold season.

The only portions from which it has not yet been recorded are the Andaman Islands, where it is probably replaced entirely by the Andaman Duck, and Tenasserim, which perhaps lies beyond its range. It is found in Ceylon. To the east it extends through the Shan States, at least as far as Kengtung, where Lieutenant J. H. Whitehead informs me that he has shot it.

The Common Teal has a most extensive range, being found in summer throughout the northern parts of Europe and Asia up to the 70th degree of north latitude, and extending into portions of North America. In winter it is found in Africa as far south as the Canary Islands on the one hand, and Abyssinia on the other. In Asia it comes south to Arabia, Persia, India, Burma, and China.

The Common Teal arrives in India from the end of September to the middle of October, and leaves again by the end of April as a rule, but many birds remain well into May. It is possible that some Teal may stay and breed in Kashmir and parts of the Himalayas, but there is no positive evidence on this point.

This Teal, in most parts of the Empire, is an extremely common bird. It occurs on almost every piece of water, whether large or small, river, pond or marsh. It is wary or tame, according to the treatment it receives. It is found in pairs and also in good-sized flocks. Immense numbers of these birds are snared in India, kept in "tealeries" and fattened for the table.

The habits of the Common Teal in India during the time it stays with us are not very different from those of the other True Ducks, and there is little to be said about them. I shall therefore proceed to quote the accounts of this bird given by two English naturalists, as they refer chiefly to the habits of this Teal in Europe during the summer.

The late Mr. Seebohm remarked:—"The Teal is no exception to the rule that the larger a bird is the more timid and wary are its actions. It is the smallest European Duck, and at the same time the tamest. It often swims in and out amongst the reeds, fearlessly allowing itself to be watched at a comparatively short distance, but once on the wing it almost rivals the Garganey in the dashing rapidity of its flight. Although it migrates far into the Arctic regions, where it arrives with the first flights of the migratory Ducks, before the rivers have been broken up into pack-ice, breeding much farther north than the Mallard, it is less courageous than the larger species in braving the storms and snows of winter. Its habits differ very little from those of its congeners; perhaps it might be said that the Teal is more partial to small reedy ponds and less fond of visiting the mud-banks on the sea-shore than its relations; but its food is the same mixture of animal and vegetable substances. Its quack or alarm-note is very similar to that of the Garganey, and may be represented by the syllable *knake*; but the call-note of both sexes is a sharp *krik*, and in the pairing-season the drake utters a harsh grating note. It is quite as gregarious as its congeners, and sometimes on migration the flocks of Teal are very large. Like the Wigeon and the Pintail, the Teal loves to breed amongst the scattered trees in the low-lying forest swamps and on the banks of the lakes and *couriers*, as the little freshwater fjords of Siberia are called, up in the north near the Arctic circle. The nest is sometimes concealed amongst the rushes, often hidden in a clump of bilberries or under a willow bush. The first egg is laid early in May in North

Germany, and even in the Arctic regions it loses no time, as eggs may be taken a week after the ice has broken up and before it has all marched down to the sea. . . . The Teal seldom sits more than three weeks; but this species is said to be so little shy that the drake takes part in the care of the young until they have feathers, when he leaves them in charge of his mate whilst he retires to asume his brown moulting-dress."

I now quote some interesting notes from Mr. Stevenson's "Birds of Norfolk." "On the 13th May I saw a Teal's nest at Ranworth containing ten eggs, from which the keeper had taken two pheasant's eggs; another nest, near the same place, which was destroyed by rats, had also contained two pheasant's eggs. Mr. Norgate saw a Teal's nest on the 19th April on Santon Warren, which contained eight teal's, one duck's, and several pheasant's, eggs. The old bird is very much attached to the nest, especially when near hatching. Mr. J. H. Gurney, jun., once found a nest at Hempstead, on June 13th, containing ten eggs, on which the old bird 'sat like a stone' till he almost trod on her; and a good many years ago, in Inverness-shire, I actually removed a Teal from her nest with my hand, so close did she sit. The stratagems resorted to by this pretty little Duck to draw off the attention of the intruder from its brood exhibit a charming display of maternal affection; the little ones, too, have a marvellous power of concealment. On one occasion I disturbed an old Teal which was brooding over a large family: off went the old bird, fluttering away as if in the last agonies of death, and the young scattered in all directions; but keeping my eye fixed on one particular baby Teal, I saw it squat down a few yards off, its neck stretched out and its little body close to the ground where some dead oak-leaves were lying; the concealment so perfect that had I not seen it assume the position I should most certainly never have detected it, nor did it stir from the spot till I stooped and took it up in my hand. . . . The note of the male Teal is a clear musical whistle; the voice of the female, however, although, perhaps, not inharmonious, is decidedly unmusical."

The nest of the Teal is made of decayed vegetable matter, and is lined with feathers and down. The latter is dark brown, each piece with a whitish base or centre. The eggs are eight or ten in number, generally perfect ellipses in shape, but sometimes rather more pointed at one end than at the other. They are creamy white or pale buff, and sometimes very pale greenish. They measure from 1·6 to 1·8 in length, and from 1·3 to 1·4 in breadth.

The adult male has the chin, a line bordering the bill, and a patch round the eye black. A broad, brilliant green or purple band extends from the eye backwards along the side of the neck. With the above exceptions, the head is of a rich chestnut, which colour extends halfway down the neck. A pale narrow line borders the green band on the head, both above and below, the two meeting in front of the eye, whence the line is produced in a crescentic form to the angle of the gape and round the black of the chin. The lower neck, the whole mantle, the sides of the breast and the inner scapulars are closely vermiculated with black and greyish white. The outer scapulars are rich cream-colour, broadly bordered with deep black on the outer web. The back and rump are ashy brown, with darker centres to the feathers. The upper tail-coverts and the tail-feathers are dark brown, margined with ashy. The lower plumage is creamy or fulvous white; the breast thickly spotted with black; the sides of the body beautifully vermiculated with black; the under tail-coverts black with a creamy buff patch on each side. The under wing-coverts are brown, margined with white, and with a white patch in the middle; the axillaries are white with brownish shafts and tips. The upper wing-coverts are brown, the larger series broadly tipped with white, which is tinged with buff as the band approaches the body. The primaries are drab on the shafts and the inner webs; brown on the outer webs and the tips of the inner. The first secondary is brown, tipped with white. The following shorter secondaries are black on the outer web, the base more or less metallic green. The succeeding three or four secondaries are metallic green on the outer web. The quill immediately next the green speculum has the inner half of the outer web brown, the outer half black narrowly edged with buff. The inner and longer secondaries are brown with black shafts. The metallic portion of the speculum is green in some lights, purplish-blue in others.

The adult female has the crown and the forehead dull rufous streaked with brown; the sides of the head and the whole neck pale buff, spotted and streaked with brown; the chin and the throat very sparingly marked with brown. The mantle, back and scapulars are dark brown, with crescentic rufous bars. The rump and upper tail-coverts are dark brown, with pale rufous edgings and angular markings on the feathers. The tail is brown with pale margins. The wing is very similar to that of the male, but the deep black border to the quill next the speculum is absent, or merely indicated by a brown border. The breast, the sides of the body, and the under tail-coverts are white, with a rufous tinge, mottled and streaked with brown. The abdomen is whitish. It is to be noted that in the female the tips to the greater wing-coverts, forming a bar above the speculum, is generally entirely white, and seldom tinged with buff as in the male.

In post-nuptial plumage, according to Mr. De Winton, as quoted by Dr. Sharpe, the male is so similar to the female, that it is hardly possible to distinguish them by any certain character.*

Young birds, on moulting from the

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* According to Seebohm, however, the male,

downy plumage, resemble the adult female, but have the wing-coverts with pale margins.

The sexes do not differ much in size; the male is slightly heavier. Length about 14½; wing 7 to 7½; tail nearly 3. The bill is blackish; irides brown or hazel; legs and feet grey to plumbeous. Weight up to 15 oz.

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at this period, retains the black-bordered quill in the wing, next to the speculum. If this be the case, the male can, of course, be recognised at a glance.

105. THE BAIKAL TEAL.

Nettium formosum, (GEORGI.)

Outer web of the primaries blackish; inner web drab, with a blackish tip.
Axillaries white, mottled with brown at the tip.
Wing about eight inches in length.
Shafts of primaries brown.
Greater upper wing-coverts uniformly tipped with cinnamon.
Speculum formed by two *oblique* bands; the upper, metallic green, sometimes very small in extent; the lower, black.

MALE: Sides of the head buff, with a black band from the eye to the throat.

FEMALE: A well-defined oval buff spot at the side of the base of the upper mandible; sides of the head streaked with black.

VERNACULAR NAMES:—None known.

THE Baikal, or Clucking, Teal is probably one of those birds which visit India in larger numbers than is generally suspected.

The larger number of individuals of this species which visit the Indian Empire consist of females and young males, and these are almost certain to be passed over as Common Teal.

The history of the few specimens of this Teal that have been met with in India is soon recorded. Blyth found one in the Calcutta bazaar in 1844. Mr. E. James procured another in Sind. A third was obtained by Mr. W. N. Chill at Sultanpur, near Delhi. Colonel McMaster believed that a Teal that he shot in the Upper Circars was referable to this species. Finally Mr. W. N. Chill obtained another specimen of this Teal, alive, also near Delhi. This bird, unlike the first procured by Mr. Chill, did not find its way to the Hume Collection, and is not available for examination.

The Baikal Teal summers in Eastern Siberia, and winters in Japan and China. It has occurred in Europe.

Very little has appeared regarding the habits of this species since the issue of Messrs. Hume and Marshall's work on the Game Birds, and I can only repeat, in a somewhat condensed form, what has been already published.

Colonel Prjevalsky remarks :—" When

migrating these Ducks fly very low, following the plains which abound with lakes; and as soon as one is perceived that is not frozen, especially in cold and stormy weather, they at once settle down on it. The presence of such a flock is always known at a good distance, as the drakes keep calling even when on the wing."

Dr. Middendorff writes:—"Although the commonest Duck on the Boganida, (70° N. lat.), it did not extend its range as high as the Taimyr river. It was not observed before the 12th June on the Boganida. On the 3rd July seven fresh eggs were found in a nest on the river bank, under a willow bush. . . . The young in down are easily recognised by the spot at the root of the bill and the stripe by the eye, which agree exactly with those of the female, but are yellowish instead of white; the feathers which are shooting out on the breast have broad and rather bright reddish brown edges. The eggs are small, bluish yellow in colour, the smallest 50 'millims' long by 35 'millims' in the widest part.

"When in flocks these Ducks were very shy, but less so when paired. They make a great noise, as they continually utter their loud clucking note."

Mr. F. W. Styan tells us that in the Lower Yangtse Basin this Teal is "abundant in winter. Generally found in vast flocks in wild open marshes and lakes, and not, like the Common Teal, on ponds, creeks, and paddy-fields. Comparatively few, therefore, are shot."

Taczanowski describes the eggs as being somewhat larger than those of the Garganey, and the colour pale greyish green, very like that of the eggs of the Mallard. They vary from about 1·8 to 1·9 in length, and from about 1·3 to 1·4 in breadth.

After the autumn moult the adult male has the forehead, the crown, the lower part of the hindneck, the chin and throat and a broad band from the eye to the lower part of the throat, black, each feather tipped with buff; and these black parts everywhere bordered with whitish. The sides of the head, the sides of the neck, and the foreneck are buff, each feather tipped with black. A broad metallic green band runs from the eye down the side of the neck. This band is separated from the buff of the lower neck by a black band, and from the black of the hindneck by a white band. The middle portion of the mantle is brown; the lateral portions are beautifully vermiculated with very fine black and ashy lines. Similar lines are to be found on some of the upper scapular feathers. The other feathers of the scapulars are creamy-buff on the inner webs; black, margined with cinnamon-red on the outer webs. All the scapular feathers are long and pointed. The upper wing-coverts are brown, the lower series tipped with cinnamon-red, which forms a band above the speculum. The shafts and the inner webs of the primaries are drab; the outer webs and the tips of the inner, brown. The outer two or three secondaries are brown, tipped with white. The succeeding short secondaries are metallic green or bronze at the base, black at the end, and are tipped with pure white. The amount of metallic green on the feathers increases progressively from the outer to the inner feathers, and the black correspondingly decreases, the speculum thus consisting of two oblique bands, one green and one black. The inner and longer secondaries are brown, with some short, irregular, black and rufous margins. The back is brown, the feathers edged paler. The rump and the upper tail-coverts are ashy brown, the feathers centred darker. The tail-feathers are brown, edged with fulvous, The breast is vinous grey, brighter at the sides, the whole marked with oval, and partially concealed, black spots. The abdomen is white. The sides of the body are beautifully vermiculated with deep ashy and pale fulvous. A crescentic white band is situated on each side of the lower part of the breast, and is partially hidden by the closed wing. The feathers on each side of the root of the tail, forming a bunch, have the tips truncated and broadly margined with white. The under tail-coverts are black, the longer feathers tipped with whitish, the lateral feathers edged with chestnut. The under wing-coverts are brown with a central patch of white; the axillaries are white, mottled with brown at the tips.

As the winter passes, the buff tips to the feathers of the crown and throat, and the black tips to the feathers of the sides of the head, get worn away, and those parts become respectively, pure black and buff.

The adult female has a large oval buff spot on either side the base of the upper mandible. The crown of the head is black, each feather edged with fulvous. The sides of the head and of the neck are fulvous, streaked with black. The mantle, back and scapulars are dark brown, the feathers margined with fulvous. The rump is dark brown, each feather edged with ashy. The tail and the upper tail-coverts are brown, edged with fulvous. The upper wing-coverts are brown, narrowly edged paler, the lower series, as in the male, tipped with cinnamon-red. The quills and the speculum are the same as in the wing of the male, except that the metallic portion of the speculum is much less in extent and sometimes extremely small and indistinct, but never entirely absent. The breast is fulvous, with large, partially concealed, round, brown spots. The abdomen is dull white; the under tail-coverts white blotched with brown; and the sides of the body rich brown, the feathers broadly margined with bright fulvous. The under wing-coverts are brown with a central white patch, and the axillaries are white, mottled with brown at the tips.

The male, in post-nuptial plumage, resembles the female very closely, and appears to be distinguishable only by the nearly uniform colour of the back, the feathers of which are barely margined paler.

The female is rather smaller than the

male, which measures: length about 15; wing about 8; tail rather more than 3. The bill is deep brown; the irides chestnut-brown; legs and feet bluish grey. The weight has not been recorded.

106. THE GARGANEY.

Querquedula circia, (LINNÆUS).

Outer web of the primaries blackish; inner web drab, with a blackish tip.
Axillaries pure white.
Wing eight inches or less in length.
Shafts of primaries white.
Bill rather wider near the tip than at the base.
Speculum pale metallic greyish green, or brown; a broad white band above and below the speculum.

MALE: Speculum pale metallic greyish green; a large white eye-band.

FEMALE: Speculum brown, often tinged with green; no white eye-band.

VERNACULAR NAMES: — *Chaitwa*, *Patari*, *Khira*, Hind.; *Ghang-roib*, *Giria*, Bengal.

THE Garganey, or Blue-winged Teal, is a winter visitor to every portion of the Empire, including Ceylon. It has not yet been actually obtained in the southern portion of Tenasserim, but it will uno ubtedly be found to occur there. This pecies is met with throughout the Shan States, as far as Kengtung at least, where Lieut. J. H. Whitehead informs me that he has shot it.

The Garganey is found over the greater part of Europe and Asia, extending in summer to about the 60th degree of north latitude. In winter it is found over a large part of Northern Africa and Southern Asia, extending to the Philippines, Borneo, Java, and other islands.

This species commences to arrive in India in August, but it is not till October, or even November, that they occur commonly in the southern portions of the Empire. At the end of March, or in the first half of April, a general movement north takes place, but a few birds remain till May.

There are many instances on record of the late, or early, occurrence of the Garganey in various parts of the Empire, and it has been thought that some birds of this species may remain to breed in favourable localities. Moreover, both Colonel Tickell at Moulmein and Colonel Irby in Oudh state that they met with young birds of this species. Both these naturalists, however, may have very pardonably mistaken males in the post-nuptial plumage for young birds. Drakes of many species migrate before they have completely re-acquired their normal male plumage, and in this state they look ragged and partially fledged, and might be easily mistaken for young birds.

The Garganey on the whole is perhaps the commonest Duck in many parts of India and Burma. In the latter country it occurs in very large numbers; and out of a large bag of water fowl shot near Mandalay, one Christmas week, fully one-quarter was composed of Garganeys.

The Garganey is chiefly found on large pieces of water containing plenty of floating weeds. I do not remember to have seen it on the banks of rivers nor on clear tanks. They are generally in flocks of considerable size.

Of the habits of this Duck in Europe, Seebohm says:—"The Garganey differs very slightly in its habits from the other fresh-water Ducks, but it has some slight peculiarities of its own. It is one of the species which are more susceptible to cold than others of its congeners; it does not venture into the high north, and even in Germany it seldom arrives from its winter quarters before April, and disappears again before the November frosts have begun. Though widely distributed, it cannot be regarded as a very common species; and though it is as gregarious as its relatives, it is not seen in such large flocks as many of them are. The Garganey is one of the least shy of the European wild Ducks, and allows itself frequently to be approached within gunshot; but it is partly compensated for its tameness on the water by the wonderful swiftness of its flight in the air, in which it is surpassed by none of its congeners. Although its flight is so rapid, it is almost noiseless; and in other respects the Garganey is a somewhat silent bird. Its quack is not so loud as that of the Mallard, but is in a slightly higher key; it may be represented by the syllable *knake*, whence the German name of this Duck, *Knäk-Ente.* It is generally uttered singly, but sometimes repeated twice. The quack is common to both sexes, but in the breeding season the male utters a harsh grating note resembling *Kr-r-r.* The food of the Garganey is the same as that of its congeners, partly insects and other animal food, partly the buds of water-plants and other vegetable substances."

Of the habits of the Garganey in India

Mr. Hume thus writes in the "Game Birds":—"I have very seldom seen them in the day feeding in fields, but I know that at nights they come in some parts of the country in such crowds into paddy-fields as to destroy acres of crops at one visit. Along the Mekran coast, and in many places along the Sindh and Bombay coasts, you find them in secluded salt-water creeks, where they seem just as much at home as in inland waters.

"They are not very wild or wary; it is generally easy enough to get shots at them with a little precaution; they are easy to work up to in a punt, but they are yet not tame and familiar like the Common Teal, and do not, like this, habitually affect pools where men constantly come and go, and in close proximity to human habitations. Generally they keep in flocks; rarely less than a dozen are found together, and most commonly from fifty to several hundreds are seen in a bunch. Few fowl sit closer or straggle less, few offer more effective big-gun shots.

"Their flight is rapid—though less so than that of the Common Teal—direct, and with far fewer sudden turns and twists. They rise rapidly and easily from the water, but not very perpendicularly. I have so seldom seen them on dry land that I can speak with no certainty about this; but once, when emerging from a dense reed-bed, through which I had been carefully creeping in order to get a shot at some Shelldrakes that I knew to be paddling about somewhere near the margin, I surprised a party of Garganeys, all asleep, on a patch of turf some ten yards square, almost entirely surrounded by high reeds; they seemed to me to rise very clumsily, and I made a tremendous bag with two barrels as they flustered up.

"They swim well, far more rapidly when pressed than the Common Teal, and dive better. They are altogether, I should say, more *vigorous* and less agile birds."

I cannot quite agree with Mr. Hume that the flight of the Garganey is less rapid than that of the Common Teal. To me it has always seemed that the flight of this species was faster than that of any other Duck I am acquainted with.

The Garganey nests in Southern Europe, but a few breed in England. Mr. E. T. Booth tells us, in his "Rough Notes":—"My own experience with regard to the situation chosen by this species for its nest differs considerably from the statement in the last edition of Yarrell, that 'in the Broad district in Norfolk, the densest reed-beds are preferred.' About Hickling Broad, where I have had ample opportunities of observing them during the summer, I remarked that the eggs were usually laid in the patches of rushes in the unreclaimed marshes, at some little distance from the water, not a single nest having, to the best of my knowledge, ever been detected in a reed-bed. Now and then the birds were known to have bred among the long coarse grass and tufts of rushes on the dryer portion of the hills surrounding the broads, but, as a rule, they go further from their usual haunts."

I again quote from Seebohm :—

"Like most other Ducks, the adult Garganeys pair in mid-winter, but the young not until spring. The first eggs are seldom laid before May. The nest is placed in a variety of positions—hidden under a bush or in thick grass or sedge; far away from water in the forest or among the corn: anywhere and everywhere where a hidden retreat can be found. . . . The nest is made very deep, and is lined with dead grass and leaves, to which is afterwards added plenty of down. The number of eggs varies from eight to twelve, or sometimes fourteen. . . .

"Like the Teal, the Garganey does not sit so long upon its eggs as most Ducks do, incubation only lasting from twenty-one to twenty-two days. As is the case with most Ducks, the male is very attentive to the female until his first moult begins, which is usually before the eggs are hatched. The entire charge of the young falls upon the mother, who is deserted by her mate until he has passed through his second moult and acquired his nuptial plumes, late in autumn."

The eggs of the Garganey resemble very closely, and, in fact, are undistinguishable from those of the Common Teal. They are buffish white or cream-coloured, and measure from 1·7 to 1·9 in length, and from 1·3 to 1·4 in breadth.

The down found in the nests of the two Teal differ, however, in a very remarkable manner. In both cases it is dark brown with pale centres, but whereas in the down of the Common Teal the filaments are entirely brown, in that of the Garganey the tips of the filaments are all very conspicuously white.

The adult male has the whole forehead and crown blackish, with some pale shaft-streaks on the former. A broad band of white commences in front of the eye, passes over it and skirts the black of the crown. The chin is black. The sides of the head, the throat and the whole neck are chocolate-brown streaked with white. The upper part of the mantle and the whole breast are barred with fulvous and brown, the bars on the mantle and upper breast being concentric with the margins of the feathers, and those on the lower breast more or less transverse and straight. The upper part of the abdomen is white; the lower part white with narrow, indistinct, undulating lines of brown. The sides of the body are white, barred with narrow undulating black lines. The longer flank-feathers are terminated by a broad white bar, followed by a broad tip of bluish grey. The under tail-coverts are pale buff, blotched with brown. The axillaries are pure white, and the under wing-coverts bluish grey, with the middle portion white. The lower part of the mantle and the back are dark brown, the feathers margined with pale fulvous. The rump is dark brown, the feathers margined with ashy. The upper tail-coverts and the tail-feathers are dark brown, margined with pale fulvous. The upper wing-coverts are bluish grey, the lower series very broadly tipped with white, forming a conspicuous wing-bar. The outer scapulars are bluish grey; the inner, which are long and pointed, are chiefly bluish black with a conspicuous white line along the shaft. The outer webs of the primaries and the tips of the inner are brown margined with grey; the remainder of the inner webs are drab; the shafts are white. The outer secondaries are brown on the inner web, pale metallic greyish green on the outer, both webs very broadly tipped with white. The next long secondary is grey margined with white; and the remaining quills are brown with paler shafts and very narrow grey margins.

The adult female has the forehead and crown glossy brown, the feathers with minute fulvous tips and margins. The hindneck is similar, but of a lighter brown. The sides of the head and of the neck and the foreneck are greyish white, mottled and streaked with brown, with a faint indication of a band over the eye. The chin and throat are greyish white. The mantle, the back, the rump, the scapulars and the upper tail-coverts are dark brown, each feather margined with fulvous ashy. The tail-feathers are brown, with narrow pale margins. The feathers of the sides of the breast are brown, with fulvous margins ; those of the middle breast dull fulvous with indistinct brown centres. The greater part of the abdomen is pale fulvous white, obscurely mottled with a darker shade of the same. The lower part of the abdomen and the under tail-coverts are fulvous white, the former faintly mottled with brown, the latter with large brown spots. The feathers of the sides of the body are brown, with fulvous margins. The axillaries are pure white ; the under wing-coverts are brown, edged with grey, and with the central portion pure white. The upper wing-coverts are light brown washed with ashy-grey, the lower series tipped with white. The primaries have the outer web and tip of the inner, dark brown ; the remainder of the inner webs pale drab ; the shafts white. The outer secondaries are entirely brown, with broad white tips, and the outer webs frequently glossed with greyish green. The inner, long secondaries are brown with a narrow, whitish margin on the outer web.

The young duckling assumes the plumage of the adult female, and young males soon show indications of the mature male plumage.

In post-nuptial plumage, the male resembles the females, but may be recognised by the brighter speculum, which is always of a pale metallic greyish green, whereas in the female it is brown with a pale greenish gloss, or simply plain brown.

Male: length about 16; wing about 7¾; tail nearly 3. Female: length about 15; wing about 7¼; tail nearly 3. The bill is blackish brown, paler on the lower mandible; irides brown; legs and feet plumbeous to greenish. Weight up to 1 lb.

107. THE FALCATED DUCK.

Eunetta falcata, (GEORGI).

Outer web of the primaries blackish; inner web drab, with a blackish tip.
Axillaries pure white.
Upper wing-coverts grey, turning to whitish and forming a very broad, pale band above the speculum; tips of the greater coverts usually tinged with buff.
Speculum black, tinged with bluish green, and becoming entirely of a deep bluish green on the two innermost feathers of the speculum.

MALE :—**Head brilliant chestnut and green; under tail-coverts black; a white spot on the forehead.**

FEMALE :—**Head and under tail-coverts black, streaked with fulvous.**

VERNACULAR NAMES :—*Kala Sinkhur*, Oudh.

THE Falcated Duck has been so often met with in India that it cannot be considered at all rare. No doubt the females and young of this species are often confounded with some of the commoner species of Ducks.

Dr. Bonavia appears to have been the first naturalist to observe this species in India. He procured two specimens near Lucknow. Subsequently Mr. G. Reid obtained this Duck in the same locality, where it seems to be sufficiently common as to be known by a vernacular name. General C. H. T. Marshall shot a specimen of this Duck on the Bazida *jhil* in the Kurnal District of the Punjab, and General J. H. McLeod secured another at Firoza, in Bhawalpur. Mr. W. N. Chill met with this species at Sultanpur. At least three of these Ducks have been, at various times, observed in the Calcutta bazaar for sale. Mr. Stuart Baker gives Jessore, Purneah, and Manipur as localities where the Falcated Duck has been obtained, and he also mentions Bhamo, near to which place Dr. J. Anderson, many years ago, got it. When sportsmen get in the way of identifying this species, no doubt it will be found to be quite a common species in Upper Burma and the Shan States; but fully adult males, with the long curved inner secondaries, will probably seldom be met with.

The Falcated Duck in summer inhabits North-eastern Asia, extending from the Yenesei River to Kamtschatka and Japan. In winter it appears to be very abundant in China. It has on a few occasions occurred in Europe.

Very little is on record about the habits of this Duck. Colonel Prjevalsky remarks that its note is a tolerably loud and piercing whistle. Von Schrenk tells us that it cackles as it feeds, and from his account it appears that this species swims in streams which, sometimes at any rate, have a strong current. Mr. F. W. Styan states that this bird collects in large flocks on the Yangtse river. I can find little else about its general habits.

Regarding the nidification of the Falcated Duck, Mr. Stuart Baker writes:—"In Manchuria, where my informant took several nests, they are said to make them on low-lying parts, along the banks of the larger rivers, which are more or less in the condition of swamps. The nest appears to be a rather well-built affair of rushes and weeds, rather more compactly put together than are most ducks' nests, and lined very plentifully with down, presumably taken from the breasts of the parent birds themselves. So thick is this down that in some of the nests, the cups of which were in some cases as much as six inches deep, it filled them completely to the top, hiding the eggs which were inside. The nests were placed in thick tufts of grass, beds of sedges, or, more rarely, under and amongst bushes; they were not very carefully hidden, and, but for the treacherous nature of the ground in which they were found, not particularly hard to get. The duck is a close sitter, and is assisted, at least occasionally, by the drake, which is seldom found far from the nest. They lay from six to nine eggs, beginning to lay in the end of May, and continuing through June and the early part of July."

Dybowski states that the female makes her nest among the bushes in swamps, collecting dry seeds and grass and lining it thickly with down. At the beginning of June she lays eight eggs, sits closely, and only rises at your feet.

I gather that the eggs of this species are creamy white in colour, and smooth in texture, and that they measure about 2·2 by 1·6.

The adult male has a white spot on the forehead, immediately at the base of the upper mandible; the forehead and crown chestnut. A large patch behind the eye, covering the ears and extending to the hinder part of the crest, is metallic green. The sides of the head, below the eye and the green patch, are bright coppery bronze. The chin, the throat, and the upper part of the foreneck are white; this colour continued round the neck and forming a collar; below this, a broad black collar glossed with green; and below this again, a narrower white collar. The mantle, back, and the shorter scapulars are beautifully marked with alternating black and white wavy lines, parallel to the margins of the feathers. The longer scapulars are creamy white, very finely vermiculated with black, a few of the feathers also broadly edged with black, forming a conspicuous black patch on the closed wing. The lower back and the rump are chocolate-brown. The upper tail-coverts are deep black at the sides; buff, vermiculated with black, in the middle. The tail-feathers are pale brown tipped paler. The upper wing-coverts are grey, turning to whitish on the lower series, the feathers of which are usually tipped with buff. The outer webs and the tips of the inner webs of the primaries are brown, the remainder of the inner webs pale drab. The first, and sometimes the second secondary, is brown; the following secondaries are brown on the inner web, black, tinged with bluish green, on the outer. The last two feathers of the speculum are a deep but slightly glossy bluish green on the outer web. All the feathers of the speculum are narrowly tipped with white. The inner, curved secondaries have the shafts white; the outer web black, margined with white; the inner web black next the shaft, grey on the marginal half. The whole breast is marked with broad, firm, black and white bars, concentric with the margins of the feathers. The abdomen and the sides of the body are greyish white, closely vermiculated with brown. The tips of the feathers of the flanks are truncated and broadly tipped with white. The under tail-coverts are black in the middle, buff at the sides. The under wing-coverts are chiefly white, and the axillaries pure white.

The adult female has the whole head and neck dark brown, streaked with fulvous, the chin and the throat much paler. The mantle, the back, and the scapulars are dark brown, each feather margined with rufous, and with some interior rufous markings. The back and rump are blackish with rufous-grey margins. The upper tail-coverts are brown with pale rufous margins and interior markings. The tail-feathers are brown, margined with whitish. The upper wing-coverts are grey with whitish margins, and gradually becoming wholly whitish near the speculum. The quills of the wing and the speculum are similar to the same parts in the male, except that the inner long quills, next the body, are brown, margined paler, and not lengthened, narrow, or curved, as in the male. The breast is rufous, each feather with a regular, broad, black, circular border, and a pale margin. The remainder of the lower plumage and the sides of the body are pale rufous or fulvous, streaked and variegated with brown. The axillaries are white, and the under wing-coverts white with some brown marks along the margin of the wing.

According to Messrs. Hume and Marshall, the male, in post-nuptial plumage, resembles the female, but may be recognised by a certain amount of green metallic gloss which is retained on the head, and by the whiter or greyer and more spotted under-surface.

The ducklings moult from down into a plumage resembling that of the adult female. The male bird assumes the plumage of the old drake by a gradual series of changes during the winter and early spring. The long sickle-shaped feathers of the wing do not, however, make their appearance till February. Males shot in India, in full adult plumage, generally want these feathers, or have them just sprouting, showing that they are immature. The old males retain these long feathers throughout the winter and spring, and only drop them in the post-nuptial stage of plumage.

Male: length about 20; wing 9½; tail 3¼. Female: length about 18; wing 9; tail 3. Bill black; irides brown; legs and feet bluish. Weight up to nearly 1½ lb.

108. THE WIGEON.

Mareca penelope, (LINNÆUS).

Outer web of the primaries blackish; inner web drab, with a blackish tip.
Axillaries white, mottled with brown.
Wing over nine inches in length.
Speculum black and metallic green; or entirely brownish; followed in either case by a *single* quill, the outer web of which is white.
Bill bluish, with a black tip; narrower near the tip than at the base.

MALE: — **Head chestnut; under tail-coverts black.**
FEMALE: — **Head marked with fulvous and brown; under tail-coverts streaked with brown.**

VERNACULAR NAMES:—*Pea-san*, *Patari*, *Pharia*, *Chota-Lalsir*, Hind.; *Parow*, Sind.; *Cheyun*, Nepal; *Ade*, *Adla*, Ratnagiri.

THE Wigeon is a winter visitor to the Indian Empire, being found in more or less abundance all over the peninsula of

India as far south as the Tinnevelly District of Madras, where Mr. W. N. Fleming records it as fairly common. Being found so far south as this, it will no doubt be hereafter observed in Ceylon. It occurs throughout the Himalayas, but there is no evidence that any ducks of this species remain to breed in Kashmir or elsewhere within our limits.

Notices of the occurrence of the Wigeon in the eastern portion of the Empire are few in number, but there can be little doubt that this widely spread Duck will be found to visit every portion of the country from Assam down to the southern limits of Pegu. Blyth recorded it years ago from Arrakan; Colonel McMaster wrote that the Wigeon was commoner in Burma than in India; Mr. Hume found it to be one of the commonest Ducks of Manipur; Captain T. S. Johnson informs me that he and his party procured four Wigeon, one Christmas week, near Mandalay; and lastly, Major G. Rippon writes to me that he has obtained this species at Fort Stedman in the Southern Shan States. The Wigeon has not yet been met with in Tenasserim, but it will undoubtedly be found in that extensive province when observers become more numerous.

The Wigeon has a wide range. It is found in summer throughout the northern portions of Europe and Asia, breeding generally north of the 60th degree of latitude, and is even found on both coasts of the North American continent. In winter this species ranges south, and is found over a considerable portion of Northern Africa, the Black Sea, Persia, India, Burma, China, and even Borneo.

The Wigeon appears to reach India about the end of October, and it leaves the country in March or April according to locality. From all accounts it is very irregular in its migrations, visiting some places in large numbers one year, and avoiding the same locality the next year.

The Wigeon is found on the larger tanks and lakes in the interior as well as on the sea-coast. It is usually seen in flocks of considerable size, but pairs or small parties are not unfrequently met with. In addition to feeding on vegetable matter and the small forms of animal life found in water, the Wigeon feeds a good deal on land, cropping grass like a Goose. It walks with considerable ease, flies swiftly, and dives well, when compelled to do so. The flesh of the Wigeon varies in quality very much, according to locality: those birds shot on inland waters, and especially those which have fed on grass, being for the most part excellent for the table, whereas those shot on the sea-coast are coarse and fishy.

Mr. Seebohm thus describes the general habits of Wigeon:—"The Wigeon has probably derived its name from its remarkable note, but, as is usual in cases of this kind, it requires a considerable stretch of imagination to recognise the similarity. The cry of this Duck is a loud prolonged whistle or scream, immediately followed by a short note. I can best represent it by the syllables *mee-yu*, the first very loud and prolonged, the last low and short. It sounds very wild and weird, as it startles the ear on the margin of a mountain tarn or moorland lake, a solitary cry, very high in key, not unmusical in tone, but loud and piercing—one of the most familiar sounds on the banks of the Petchora and the Yenesay, where the Wigeon is very abundant, especially on the lakes and swamps of the borderland, where the forest merges into the tundra not far north of the Arctic circle. . . . The Wigeon is a bird of rapid and almost noiseless flight, and is very shy, especially when collected in large flocks, which are almost impossible to approach. According to Naumann the duck sits from twenty-four to twenty-five days; for about half this period she is attended by the drake, who roosts during the day not far from the nest, and faithfully accompanies his mate every evening to the feeding-grounds; but long before the eggs are hatched, either his ardour has cooled or important business calls him elsewhere, and he leaves her to bring up her brood alone, whilst he retires into the marshes to undergo his first moult. As soon as the young are able to fly, the female leaves them to fight their own way in the world, whilst she undergoes her one annual and complete moult in the most retired locality she can find. As soon as the frosts begin the Wigeon leaves its breeding-grounds for the south."

Mr. Abel Chapman, in his "Bird-Life of the Borders," after commenting on the fact that Wigeon for some weeks after arriving south in autumn remain inside harbour throughout the day, instead of flying out to sea at dawn as is their custom later on, continues:—"This phase in the character of Wigeon is rather remarkable, and appears at first sight to point to the conclusion that they are, by nature, diurnal in their habits, and that they are only driven to acquire night-feeding proclivities by the influence of man, and by considerations of safety. But, on further examination, this conclusion appears hardly to be borne out, though Wigeon are undoubtedly far more disposed to feed by day than are the Mallard. It must be remembered that, in their northern breeding grounds (whence they have newly returned) there is practically, during their sojourn there, no night at all. Even in Central Norway there is no darkness, and in their grand resorts in Lapland and corresponding latitudes, midnight is indistinguishable from noon. Consequently they then acquire promiscuous habits ; and, like other Arctic voyagers, they eat when hungry and sleep when tired, without much regard to solar chronology. On first arrival here, the Wigeon, and especially the young birds, which now for the first time experience the regular alternations of light and darkness, continue the somewhat anomalous habits acquired in northern lands, where the summer sun never sets, or at least his light never dies out. In a few weeks, however, they adapt themselves to the altered conditions, and become absolutely nocturnal in their habits."

Sir Ralph Payne-Gallwey, in "The

Fowler in Ireland," observes:—"The actions of Wigeon when unsuspicious and playful are very interesting. They may be observed dressing their feathers, washing, tossing the water about, and nodding and bowing *vis-à-vis* like cocks fighting. The old yellow-headed males may be seen chasing the others, or ploughing and splashing through the water after one another, and causing great commotion in the ranks. Some will stand up on end, the treading feet assisting them to maintain an upright attitude, without which the wings could not be fanned and dried clear of the water. . . . A large company of Wigeon feeding in earnest are oftentimes the most silent; though when in shot, or nearly so, you may discern the low croaking purr of satisfaction emitted by the hen, the soft quiet whistle of the cock, and the rippling bills as they shovel greedily along the ooze. Duck and Wigeon, when they get the chance, are as fond of feeding by day as by night. It is an error to suppose that it is invariably after dark the latter seek their food; they prefer night, because they are then safer from disturbance in most places; but when left alone in spots where food abounds, they will feed with avidity during the day."

Mr. Monement, as quoted by Mr. Stevenson in his "Birds of Norfolk," informs us that in foggy weather and rain Wigeon are restless and silent at night, but when the weather is bright and frosty they are usually noisy and more or less unsuspecting. As with Wild Duck, the female of the Wigeon is a more expert diver when wounded than the male, although the superiority is not so marked. He found the Wigeon's sense of smell to be less acute than that of the Wild Duck or Teal, but it is nevertheless unsafe for the gunner to go directly to windward of them, unless at a considerable distance.

The Wigeon breeds about June, constructing its nest in the long grass and rushes growing on the margin of a lake or pond. The nest is deep, made of vegetable matter, and well lined with down. This latter is sooty brown in colour with white centres. The eggs vary in number from seven to twelve. They are of a very pale buff or cream-colour. They are seldom perfectly elliptical, one end being rather markedly more pointed than the other. They measure from 1·9 to 2·3 in length and from 1·3 to 1·6 in breadth, from which measurements it will be seen that they are very variable in size and shape.

The plumage of the Wigeon varies considerably according to age and season. The following descriptions are taken from good representative specimens. The fully adult male has the forehead and crown creamy buff. The remainder of the head and the upper neck are chestnut, more or less spotted, rather minutely, with black. The chin and throat are dusky. The mantle, the back, and the scapulars are grey, vermiculated with black. The rump and the upper tail-coverts are more delicately vermiculated, and the middle of the rump is almost plain grey. The longer upper tail-coverts are black with whitish inner margins. The middle pair of tail-feathers is plain brown; the others ashy, margined with whitish. The upper part of the breast and the sides of the breast are a delicate vinous, tinged with grey, the portion immediately next the chestnut neck vermiculated with black, like the mantle. The lower part of the breast and the whole abdomen are pure white; the sides of the body vermiculated with black and grey; the sides of the rump white; the under tail-coverts black. The under wing-coverts are ashy grey; the axillaries white, more or less mottled with brown. The lesser upper wing-coverts, round the edge of the wing, are grey, very finely vermiculated; the remaining upper coverts pure white, the lower series tipped with black. The outer web and the tip of the inner web of the primaries are brown; the remaining portion of the inner web is a pale drab. The outer secondaries are brown on the inner web. Their outer web is deep black, with the basal portion bright metallic green, the amount of green increasing on each feather progressively. The first inner secondary, the one next the speculum, has the outer web almost entirely white with a black margin. The remaining secondaries are black margined with white on the outer web, brown on the inner web.

Younger males resemble the old male, but have the whole head chestnut, spotted with black. Others have the buff forehead and crown of the old male, but the brown upper wing-coverts of the female. The head and the upper wing-coverts appear liable to great variation, and are the very last portions of the plumage to be permanently changed. Males probably take three years before they acquire their perfect plumage.

According to Seebohm, adult males in moulting-plumage (or, as I should term it, in post-nuptial plumage) "are more brilliantly coloured than usual, the principal difference being that the black and white vermiculated upper parts are changed to dark brown barred with chestnut and buffish white, which is also the colour of the upper breast, whilst the flanks are nearly uniform chestnut."

According to Mr. De Winton, as quoted by Dr. Sharpe, "After the breeding season both males and females assume a very distinct summer dress of reddish brown, though the female is not quite so rufous. In the male, all traces of the beautiful breeding-dress disappear."

Mr. Howard Saunders, in his revision of Yarrell's "British Birds," quoting Mr. Cecil Smith, says: "The adult male birds undergo considerable change in their appearance towards the end of June, or the beginning of July; at which time the head, neck, breast and flanks become a rich rusty-red, but always so much brighter than the browner tints of the female, that the sexes may easily be distinguished."

Dr. Blanford writes:—"After the breeding season the male moults into a dress much resembling the female, except that the head and neck are dull chestnut spotted with black, without the buff patch; upper breast and flanks dull ferruginous."

As I have not been able to examine any specimen of a Wigeon which could be satisfactorily determined as being a male in post-nuptial plumage, I am unable to throw any further light on the matter from my own investigations.

The adult female, in newly-moulted plumage, has the forehead and crown brown barred with fulvous. The sides of the head, the chin, throat, and the whole neck are fulvous, spotted and streaked with brown. The whole upper plumage and the scapulars are brown, each feather margined with fulvous or pale rufous. The tail-feathers are brown, narrowly margined with whitish. The whole breast and the sides of the body are rather bright fulvous, all the feathers with paler edges. The lower plumage is white, the under tail-coverts with large brown central streaks. The axillaries are white, very thickly mottled with brown. The under wing-coverts are mottled ashy brown. The upper wing-coverts are brown, margined with white, the lowermost row whitish tipped with black. The primaries resemble those of the male. The outer secondaries are ashy brown, gradually turning to black, the whole of them tipped with white, and the innermost two or three black secondaries with a small patch of metallic green near the base. The secondary following the black ones is nearly entirely white on the outer web. The remaining secondaries are brown, edged with fulvous.

The plumage of the females is subject to variation caused by the wearing away of the margins of the feathers and a general fading of the plumage. In females which are not quite adult there is no trace whatever of metallic green on the wing, and the outer secondaries are never black. At all ages, however, there will always be found the single inner secondary with the white outer web.

The sexes do not differ much in size, but the male is generally a heavier bird than the female. Length about 19; wing about 10; tail 4 to 4½. The bill is bluish with a black tip; the irides are brown; the legs and feet greyish brown. Weight up to about 1¾ lb.

109. THE PIN-TAIL.

Dafila acuta, (LINNÆUS).

Outer web of the primaries blackish ; inner web drab, with a blackish tip.

Axillaries white, mottled or barred with brown.

Wing over nine inches in length.

Speculum green or bronze with a cinnamon bar above it ; or simply mottled brown, between two narrow white bands ; in either case followed by a quill, the outer web of which is white.

Bill distinctly wider near the tip than at the base.

MALE :—Speculum brilliant ; under tail-coverts black ; a band of white on the side of the neck ; middle tail-feathers lengthened.

FEMALE :—Speculum brown ; under tail-coverts marked with brown ; middle tail-feathers not lengthened.

VERNACULAR NAMES :—*Sanh*, *Sinkpar*, Hind. ; *Kokarali*, *Drighush*, Sind. ;

Digoonch, Nepal; *Dighons*, *Sholoncho*, Bengal; *Laitunga*, Manipur; *Tau-bay*, Burm.

The Pin-tail occurs, as a winter visitor, in every portion of the Indian Empire from Kashmir and the Punjab to Assam, and thence to the extreme southern point of India and Ceylon on the one hand, and to Burma, at least as far as the latitude of Moulmein, on the other. On the east, Lieut. J. H. Whitehead informs me, it extends to Kengtung in the Shan States, where he has shot it.

The Pin-tail has a very wide range, being found throughout the greater part of the Northern Hemisphere. In summer it is a circumpolar bird, breeding between the 60th and 70th degrees of north latitude and occasionally farther south. In the winter it is found as low down as Central America, Northern Africa, Asia Minor, Persia, India, Burma and China.

The Pin-tail commences to arrive in Kashmir and the Himalayas as early as the end of September, but it does not become generally common in the plains till November. It commences its return journey to the north in March, a few birds remaining till the beginning of April.

The Pin-tail is a sociable bird and assembles in large flocks, but it is somewhat capricious in its choice of localities. Usually it is met with on large sheets of water or tanks on which there is a mixture of clear water and islands of floating weeds. It also frequents the sea-coast. It does not appear to be found on the large rivers in any quantities. Pin-tails feed a good deal at night, and they then betake themselves to shallow swamps and even to rice-fields. The Pin-tail is very shy, and its flight is extremely rapid. When once disturbed it seldom returns to the same piece of water until some hours have passed. It is one of the best Ducks for the table.

Mr. Hume brings to notice an interesting fact about these Ducks. He says:—"It is worth noting, because it is a peculiarity almost confined to this species, that during the cold season one continually comes across large flocks consisting entirely of males. I cannot say that I ever noticed similar flocks of females, but this may be because the females do not attract the eye similarly, and are not equally readily discriminated at any distance, but 'bull-picnics' I have noted, times without number, as a speciality of the Pin-tail."

This curious habit is corroborated by Mr. G. T. Booth in his "Rough Notes." He writes:—"I never noticed large mixed bodies of males and females, seldom more than ten or a dozen being in company when both sexes were represented, though thirty, forty, or even fifty drakes were often met with by themselves."

Mr. Hume further observes:—"The Pin-tail, when undisturbed, is a silent bird by day, and rarely utters any sound, even when feeding, though I have, when lying up pretty close to them, heard a little low chatteration going on, more like the low clucking of hens than anything else. But when alarmed by day, and pretty constantly by night, they utter their peculiar soft quack,—such a note as one might expect a Mallard, not quite sure whether he meant to speak or not, to emit—quite different from the sharp quack of the Gadwall, softer and less strident than that of the Mallard, but still not at all feeble, on the contrary audible at a great distance."

Montagu describes the notes of the Pin-tail as being "extremely soft and inward; the courting note is always attended with a jerk of the head; the other greatly resembles that of a very young kitten.

In the spring the male indicates his softer passions by suddenly raising his body upright in the water, and bringing his bill close to his breast, uttering at the same time a soft note. This gesticulation is frequently followed by a singular jerk of the hinder part of the body, which in turn is thrown up above the water."

Mr. Seebohm thus describes the habits of this Duck :—" The long neck and long pointed tail give to the Pin-tail a somewhat more slender appearance than that of most of its kind. It belongs to the fresh-water group of Ducks, breeding in the midst of moors, lakes, rivers, and swamps; but on migration and in winter spending most of its time on the sea-shore, to feed on the mud-flats at low tide. It is one of the earliest Ducks to arrive in spring, and one of the latest to leave in autumn. . . . In its habits it most closely resembles the Mallard, feeding, like the other fresh-water Ducks, on insects and mollusks, and partly on the ends of grass and the buds of water-plants; but, like the Mallard, it frequents the stubble-fields in autumn to pick up the fallen grain. Its voice closely resembles that of the Mallard and Shoveller, but on the whole it is a silent bird. This may be accounted for by its extreme wariness; it takes such great care to avoid danger, that its alarm-note of *quaak* is not often required. Its call-note is a low *kāh*; and Naumann says that, in the pairing-season, the male may be seen swimming round the female uttering a deep *clük*, which, if the observer be fortunate enough to be sufficiently near to hear it, is preceded by a sound like the drawing in of the breath, and followed by a low grating note."

Writing of his experiences in Siberia he goes on to say:—"Early the next morning the sight that presented itself to our view was a most interesting one. As far as we could see, the strip of open water on each side of the ice in the Zylma was black with Ducks, and overhead Ducks were flying about in every direction like a swarm of bees. To estimate the number at half a million would probably be to guess under the mark. They were almost all of them Pin-tails, but many Teal and Wigeon were among them. In spite of their enormous numbers they were wild enough. We had no difficulty in watching them through our glasses so as to identify the species;

but when it came to getting within shot, we found the only way was to conceal ourselves behind a willow-stump and take them as they flew over. After the weary waiting for summer to come, with comparatively few birds to watch except the flocks of Snow-Buntings, Shore-Larks, and Lapland Buntings, it was most exciting to find ourselves in the midst of such abundance of bird-life. . . . As soon as the snow had melted, the Ducks, or those of them which remained, began to breed. The nests of the Pin-tail were placed in the grass among the shrubs in dry places, generally at some distance from the water; they were deep, and well lined with dead grass and sedge, and, when the full clutch was laid, contained plenty of down. We took the first eggs on the 5th June."

The eggs of the Pin-tail are seven to ten in number, and they are of a dull green or greenish buff colour. Some eggs are perfectly elliptical, others slightly pointed at one end. They vary from 2 to 2·25 in length, and from 1·5 to 1·6 in breadth. The down is dark brown with a white centre.

The adult male has the whole head and the foreneck rich brown, the feathers of the crown with dark centres, those of the other parts more or less minutely mottled. The hindneck is blackish, bordered in front and at the sides by a white band. The sides of the lower part of the neck, the breast, and the upper part of the abdomen are usually pure white, but these parts are frequently tinged with ferruginous. The lower part of the abdomen is minutely vermiculated with brown. The sides of the body are beautifully vermiculated with black and pale buff, the lower feathers very much lengthened; a large patch on each flank is yellowish buff. The under tail-coverts are black, some of the lateral feathers margined with buff. The axillaries are white, mottled with brown; the under wing-coverts ashy brown with narrow whitish margins. The mantle, the back, and the upper scapulars are vermiculated with black and buff. The outer scapulars are chiefly black, forming a large patch of this colour. The long, pointed scapulars are chiefly black, variegated with long lines of buff. The rump is dark brown, irregularly vermiculated and mottled with buff. The upper tail-coverts are blackish on the outer, pale buff on the inner, web. The middle tail-feathers are black;

the others are brownish on the outer, drab or pale buff on the inner, web. The upper wing-coverts are dark grey, the lower series broadly tipped with cinnamon. The primaries are dark brown on the outer web and tip of the inner; light drab on the inner web. The outer secondaries are changeable metallic green or bronze, tipped with a double band, the upper portion of which is black, and the terminal portion white, frequently tinged with cinnamon. The secondary next to the quills composing the speculum is black, with a pale buff band next the shaft. The inner, long secondaries are black, with a broad drab margin.

In post-nuptial plumage, the drake resembles the female very closely, but he retains the full speculum of the winter plumage.

The adult female has the forehead and crown reddish brown, streaked with black. The remainder of the head and the whole of the neck is pale fulvous with numerous small black streaks. The whole lower plumage is greyish white, each feather with an ill-defined dark centre. The sides of the body and the under tail-coverts are marked with crescentic lines of brown and white, parallel to the margin of the feathers. The axillaries are white, coarsely barred with brown. The under wing-coverts are brown, margined with white. The mantle, the back and the scapulars are dark brown or black, barred with undulating or curved bands of fulvous. The rump and upper tail-coverts are black, each feather margined with pale fulvous or fulvous white at the sides, but not at the extreme tip. The tail-feathers are dark brown, diagonally barred with fulvous and edged paler. The upper wing-coverts are blackish, narrowly margined with pale fulvous, the lower series conspicuously tipped with white, the tips forming a band. The primaries are dark brown on the outer web and the tip of the inner, light drab on the inner web. The outer secondaries are mottled black and brown, with some admixture of fulvous, and broadly tipped with white. The inner, long secondaries are brown, margined with fulvous.

Young birds, of both sexes, moult into the plumage of the adult female, and the young males soon commence to show signs of the adult male plumage.

Male: length about 25; wing about 11; tail $7\frac{1}{2}$. Female: length about 21; wing about $9\frac{1}{2}$; tail $4\frac{1}{4}$. In the male, the bill is black with the sides of the upper mandible blue ; in the female, the bill is greyish black above, reddish brown beneath. The irides are brown ; the legs and feet are greyish plumbeous, blackish on the central portion of the webs. Weight up to 2¾ lb.

110. THE GADWALL.

Chaulelasmus streperus, (LINNÆUS).

Outer web of the primaries blackish; inner web drab, with a blackish tip.

Axillaries pure white.

Speculum brown turning to black, and followed by *several* quills, the outer webs of which are white. Most of the wing-coverts of the greater series black, forming a large patch above the speculum.

Bill of uniform width throughout.

MALE: Under tail-coverts black.

FEMALE: Under tail-coverts fulvous, marked with brown.

VERNACULAR NAMES:—*Mila*, *Bhuar*, *Beykhur*, Hind.; *Burd*, Sind.; *Mail*, Nepal; *Peeing-hans*, Bengal.

THE Gadwall has been observed, as a winter visitor, in most parts of the peninsula of India, from the Himalayas down to Mysore. South of this, and in Ceylon, it has not yet been met with. It ascends the Himalayas up to 5000 or 6000 feet.

This Duck extends through Bengal and Assam, and has been obtained in Tipperah, Sylhet, Manipur and Arrakan. Captain F. T. Williams informs me that it occurs on the Chindwin river. Captain T. S. Johnson found it common near Mandalay, and Major G. Rippon writes to me that, in his opinion, this is the commonest duck in Upper Burma, Teal alone excepted. I have not heard of its occurrence south of the Mandalay District.

The Gadwall, like many other species of the True Ducks, has a very wide distribution, but does not reach quite so far north in summer, being found up to the Arctic Circle, but, as far as we know, never within it. It occurs alike in North America, Europe and Asia. In the winter it ranges south to Mexico, to Northern Africa, South-western Asia, India, Burma and China.

Gadwalls may be seen in the Himalayas towards the end of September, but they are not fully established in the plains till the end of October or the beginning of November. They return north in March and April, and they are sometimes still to be met with early in May in the North-West.

Writing in the "Game Birds," Mr.

Hume thus describes the habits of the Gadwall :—"They are, I think, essentially fresh-water birds (I have never seen them really on the sea-coast), but having secured fresh water, they do not seem to have much preference as to locality, and you find them equally in the largest rivers and the smallest hill-streams, in huge lakes and small ponds, in open water (as at the Sambhur lake) where not a reed or rush is to be seen, and in tangled swamps, where there is barely clear water enough to float a walnut.

"In rivers and in small pieces of water, the Gadwall commonly occurs in small parties of from three to a dozen, but in large lakes I have seen them in flocks of several hundreds.

"On rivers they are generally to be seen snoozing on the bank during the day, and then they commonly leave these towards sunset for feeding-grounds inland. In broads they keep, if at all disturbed, well out of gunshot towards the centre, sometimes in clear water, more often skulking in low water-weeds; but in unfrequented places they may, even during the day-time, be found walking on the shore or paddling in the shallows round the edges of the tank, feeding busily with their tail-ends bolt upright, and the rest of them hidden by the water.

"They swim more lightly and they fly far more easily and rapidly than the Grey Duck or the Mallard. But like the former they spring up with one bound from land and water, at a rather sharp angle, and usually rise thus for twenty yards before sweeping off in a horizontal course. Their wings are long and pointed, and make in passing through the air a peculiar whistling sound similar to, though louder than, that made by the Common Teal, by which they may be recognised as they pass overhead in flight shooting."

With reference to Mr. Hume's remark that the Gadwall is essentially a fresh-water species, Mr. J. D. Inverarity writes in "Stray Feathers":—"I have frequently seen them in salt creeks on the other side of the Bombay Harbour, and I shot one out of a very large flock in a salt-water creek close to the tank where I got the Scaup on the same day."

Mr. Hume continues:—"The quack of the Gadwall is very much like that of the Mallard, but weaker and sharper, and more often uttered. They are more talkative birds than either the Grey or Common Wild Duck, and when feeding in undisturbed localities keep up a perpetual chatteration, not unlike that in which the Mallard *occasionally* indulges, but shriller, feebler, and far more incessant.

"On land it walks extremely well, far more gracefully than do the Mallard or Grey Duck, and may often be seen trotting about on tiny smooth grass patches at the margins of broads, busily devouring grasshoppers, crickets, and (strange though it may seem, it is the fact) small moths and butterflies.

"When wounded and pursued, they dive easily, but are much more easily tired out and captured than the Grey Duck, or *à fortiori* any of the Pochards."

Mr. E. C. Stuart Baker remarks regarding this Duck :—

"Surgeon-Captain Woods says that even in Manipur they leave about the end of March.

"An interesting fact noted by this close observer is that many, perhaps the majority, of these ducks pair off before leaving their winter quarters. He says most of them pair off in March, but that he has noticed some pairing as early as February. No one seems to have noticed these birds arriving at their breeding-grounds in pairs, so it is to be presumed that, their preliminary courtship completed, the pairs reassemble in flocks which remain together until they reach their nesting haunts.

"The Gadwall ranks very high up in the table of duck precedence. There are so many good points about it which attract favourable notice. As an article of diet few ducks are better. Some people would give the prize in this respect to the Mallard, others perhaps to the Pintail, but take the Gadwall all round it is hard to beat on the table. Personally I have never known the duck to have a fishy or other unpleasant flavour, nor have I met any Bengal sportsman who has charged it with this crime. But the northern presidencies have held men who have complained of this flavour when they first arrive. They *ought* to be all right, as they are almost entirely vegetable feeders, subsisting much on wild and cultivated rice, water-weeds, etc., and seldom varying the diet with animal food. A drake shot in Silchar was found to contain a mass of small white worms in addition to some water berries and half ripe rice, but this in no way affected the flesh.

"Before cooking, however, he has to be shot, and though not as a rule a very shy bird, yet he is quite wide awake enough to make the getting within shot of him an interesting, if not difficult job. Where, too, he has been much shot at, one's ingenuity and perseverance will be required before the game-bag can be made to assume the bulgy appearance it ought. Then, when you have got within shot, the Gadwall proves a thoroughly sporting bird: he is quick off the water, rising rather straight up into the air, and getting very soon well under way, and in full flight the Gadwall is even faster than the Mallard and, as many writers have observed, reminds one much of Teal in the manner of flying and the swish-swish of the wings as the flock hurtles overhead, leaving, let us hope, two birds in response to the right and left with which it has been greeted."

The Gadwall breeds throughout a considerable portion of Europe and in other temperate parts of the world. Regarding its nidification Mr. Seebohm says :—"The nest of the Gadwall is placed under some convenient bush, or beneath the shelter of a tuft of coarse grass or rushes, at no great distance from the water's edge. In rare instances it is made at some considerable distance from water. The nest is a mere depression in the ground, probably scratched out by the female, and lined with a little dry grass, bits of reed or rush, and, in some cases, with a few dead leaves. The eggs of the Gadwall are laid in May, frequently not before the end of the month."

Mr. Stevenson tells us :—"I have never seen the nest of a Gadwall far from the water; it is generally placed either in a very boggy spot, or in a tussock of sedge, by which it is raised above the shallow water itself. In such situations it is constructed of dead grass or sedges, and very sparingly lined with down. The usual complement of eggs seems to be from ten to thirteen."

The eggs of the Gadwall appear to be cream-coloured when freshly laid, but, judging from a number of eggs of this species in the British Museum, they are often of a decidedly greenish tint: whether this is the original colour of some eggs, or imparted to the shell by incubation, it is difficult to say. They are slightly more pointed at one end than at the other, but many eggs are quite elliptical. They measure from 1·9 to 2·2 in length, and from 1·4 to 1·55 in breadth. The down is dark brown with pale centres.

The adult male has the crown and the

hinder part of the head brown, the feathers with very narrow fulvous margins. The remaining parts of the head, with the forehead and the whole neck, are whitish or pale fulvous, closely streaked with dark brown. Each feather of the upper breast and of the sides of the breast is black, with several narrow, concentric, white bars. The feathers of the middle of the lower breast are white, with one or two broad, black bands. The upper part of the abdomen is white; the lower, white with narrow brown undulating cross-bars. The sides of the body are very distinctly barred with brown and pale fulvous. The axillaries and under wing-coverts are pure white. The under tail-coverts are deep black. The mantle, the back and the outer scapulars are vermiculated with white or pale fulvous on a dark brown ground. The inner scapulars are brown with fulvous margins. The rump and the upper tail-coverts are black. The tail-feathers are ashy brown, the exterior ones much mottled with white and fulvous. The primaries are drab on the inner web, the outer web and the tip of the inner being brown. The first four secondaries are brown tipped with white; the next four are black on the outer web and tipped with white; the next four are white on the outer web, forming a large patch. The inner pointed secondaries are ashy. The first series of upper wing-coverts is ashy, marked with brown; the middle series is chestnut; and the third or lowest series has the inner two-thirds black, the outer third grey.

According to Dr. Bowdler Sharpe "the Gadwall drake, like the Mallard, assumes a sort of female plumage after the breeding season. The male then resembles the female, but is darker, as is the case with the other Ducks which assume the female coloration. The black rump, which is so characteristic of the adult Gadwall, disappears, as do the distinctive markings of the wing, and the male in the hen-like plumage can scarcely be told from the female. Mr. De Winton says that the summer dress is not so distinctive as in some of the other Ducks, as the male does not lose his speckled breast, or all the vermiculated feathers of the body, or the black under tail-coverts. The bill has much more yellow on it, and it is more like that of the hen, while the feet are dull orange with sooty webs."

The adult female has the crown and back of the head streaked with black and fulvous. The remainder of the head and the whole neck is fulvous, streaked with black. The whole breast, the sides of the body, and the under tail-coverts are fulvous with large brown spots and streaks. The abdomen is white. The axillaries and the under wing-coverts are pure white. The mantle, back, upper tail-coverts and scapulars are black, the feathers with broad bright fulvous margins and concealed diagonal bars. The rump is black, irregularly barred with fulvous. The tail is brown, tipped paler and with diagonal fulvous bars. The first or upper series of wing-coverts is brown with whitish margins. The second or middle series is similar, but intermixed with a few chestnut feathers. The third or lower series is ashy on its outer half, black on its inner half. The primaries resemble those of the male. The first seven or eight secondaries are brown, progressively turning darker or blackish as they approach the body, and tipped with white; the next two or three secondaries are white on the outer web, forming a large patch. The inner, long secondaries are brown, narrowly margined with whitish.

Young birds in their first plumage very

closely resemble the adult female, but they have the whole lower plumage densely spotted or streaked. A smaller area of the lower series of the upper wing-coverts is black, but there is always enough black to make a patch and catch the eye. The white patch on the secondaries is always present.

Male: length about 20; wing 10½; tail 3½. Female: length 19; wing 9½; tail 3¼. In the male the bill is black; in the female the bill is orange-brown, variegated with black. The irides are brown. The legs are yellow or orange, with the webs black. Weight up to a little more than 2 lb.

111. THE SHOVELLER.

Spatula clypeata, (LINNÆUS).

Outer web of the primaries blackish; inner web drab, with a blackish tip.
Axillaries pure white.
Upper wing-coverts blue, separated from the green speculum by a white band.
Bill twice as broad near the tip as at the base.

MALE: **Head and under tail-coverts black**

FEMALE: **Head and under tail-coverts fulvous, streaked with brown.**

VERNACULAR NAMES:—*Tidari*, *Punana*, *Tokurwalla*, *Ghirah*, Hind.; *Alipat*, Sind; *Dhobaha Sankhar* (male), *Khikeria Sankhar* (female), Nepal; *Puntamookhi*, Bengal.

THE Shoveller occurs in the winter months throughout the peninsula of India from Kashmir and the Himalayas down to the extreme south, and in Ceylon. It has not yet been procured in the Andamans or Nicobars. It is found in Assam, and it has been recorded from Sylhet, Cachar and Manipur. Dr. Anderson obtained it at Bhamo and on the Taping River. Captain F. T. Williams informs me that it occurs on the Chindwin. It is common near Mandalay, for Captain T. S. Johnson counted thirty-five ducks of this species in a total bag of 562 ducks shot near that town at Christmas. I procured a specimen of this Duck at Fort Stedman, and Major G. Rippon writes to me that it is fairly common in the Southern Shan States. The Shoveller probably occurs much farther south, but personally I did not meet with it in Pegu, nor has it been recorded from Tenasserim.

The Shoveller is a very widely distri buted Duck, being found throughout the northern hemisphere in summer, up to nearly the 70th degree of north latitude; and in winter, south to Mexico and the West Indies, over a large portion of Northern Africa, in Arabia, Persia, India, and Southern China.

The Shoveller arrives in the plains of India and Burma during October, and has generally left by the end of April. It is probable that, as suggested by Adams, some of these birds may remain to breed in Kashmir.

The Shoveller, however common it may be, is generally found in small parties, keeping to themselves, and not joining in the movements of the neighbouring parties. It is particularly tame and confiding, and is not easily driven away from its favourite haunts. It frequents pieces of water of all sizes, less frequently the banks of rivers, and seldom or never the sea-coast. It is generally found on shallow water and near the banks, for, as may be judged from the shape of its bill, it is essentially a sifter of mud. In India, it is decidedly a coarse feeder, and is often found in filthy water. Its flesh is consequently of very inferior quality. In England, however, Mr. Stevenson tells us that the flesh is excellent, and only inferior eating when killed out of season or in brackish marshes. Shovellers do not fly so swiftly as many of the True Ducks; they swim slowly, and they seldom dive. Wounded birds are very tenacious of life, and give much trouble before they are captured. Mr. E. T. Booth in his "Rough Notes" records an instance of a Shoveller having its skull fractured and a portion of the brain protruding, but, nevertheless, recovering in the course of a few weeks. This Duck appears to differ from other species in its mode of feeding, being seldom or never seen with the front part of its body immersed and the hinder part stuck up out of the water.

Mr. Cordeaux thus describes a peculiar habit of the Shoveller :—"These Ducks, I am told by those who have had the opportunities of watching them, have a curious habit of swimming round and round each other in circles, with the head and neck depressed to the surface of the water; this they will do for hours together." This, according to Mr. Alfred Newton, as quoted by Mr. Stevenson, is no amatory action, but for the object of procuring food, as a pair, when feeding, "get opposite to one another, and swim round in a circle, holding their heads towards its centre, and their bills plunged into the water perpendicularly and up to the base, while their mandibles are employed in 'bibbling,' to use a Norfolk term. They will swim in this way for ten minutes together, always preserving their relative position on the circumference of the circle they are describing; then after a pause, and perhaps a slight removal of a yard or two, they will resume their occupation."

Mr. Seebohm has the following note

on the flight and voice of this species:—

"The flight of the Shoveller is not quite so rapid as that of some other Ducks, but the pinions are moved rapidly and very audibly even at some distance. It is not otherwise a very noisy bird. The duck *quacks* not unlike the domestic species; the voice of the drake is a little deeper; if we represent the former as *quaak*, the latter might be represented as *quauk*. On the wing the note is a guttural *puck puck*."

Sir Ralph Payne-Gallwey has the following interesting note in his "Fowler in Ireland":—

"They swim in bunches of from seven or eight to fifteen—that being the number I have usually seen together, seldom more—and are very easy to approach. In calm water they may be noticed paddling lazily forward as though asleep, their heavy-looking bills rippling along the surface as if in the act of drinking. Perhaps when at rest the head is overbalanced by the unusual weight attached, and it may be an exertion for the bird to keep its bill in a constantly horizontal position. They fly well; not so boldly perhaps as other ducks, but not so low as the divers. I have more than once seen these birds suck up the falling rain with their spoon-shaped bills as it, for the moment, lay on their somewhat cup-shaped backs. I never remarked this habit in other species of duck. Shovellers are poor divers when wounded. The feet are peculiarly small, and give but weak propelling power to the body. The foot of a Shoveller is smaller in proportion to its body than that of any of the true ducks. The larger the foot in the duck tribe the better they can dive. . . . When feeding the bird swims swiftly along the water, skimming the surface with its broad bill, quickly opening and closing it, and causing a loud rippling noise that may be heard many paces distant."

Mr. Seebohm, writing of the nesting habits of this species, says:—

"The Shoveller is a somewhat late breeder; eggs are seldom found in this country before the middle of May, and in high latitudes not until the middle of June. During pairing-time the males may constantly be seen chasing the females, and until the female begins to sit she is generally followed by several males every time she leaves her nest; but the Shoveller cannot be regarded as a polyandrous bird like the Cuckoo. Each female appears to have a male specially attached to herself, who waits upon her, and does not venture to rise from the water until she takes wing, but is not allowed to interfere in the selection of a site for the nest, or in the important operation of building it, or, after the eggs are hatched, in the care of the young. The nest is generally placed in the open, well concealed in long grass or heath, and is not very skilfully made. The depression in which it is placed, if deep, is only slenderly lined with dead grass or sedge ; but, if shallow, a considerable amount of material is collected to give the nest the required depth. When the female leaves her eggs after she has begun to sit, she carefully covers them with down. Seven to nine is the usual number of eggs, but occasionally clutches are found as large as ten to fourteen. Only one brood is reared in the year ; but if the first nest be robbed before incubation has proceeded very far, a second nest is made, but seldom more than five or six eggs are laid in it."

The eggs of the Shoveller are nearly elliptical in shape, one end being very slightly more pointed than the other. In colour they are a pale greenish grey, and they measure from 1·8 to 2·2 in length and from 1·4 to 1·6 in breadth. The shell is very smooth and has a little gloss. The down has pale centres and very minute white tips, the general colour being a very dark brown.

The adult male has the forehead and crown black, with a slight gloss. With this exception, the whole head and neck are black with a brilliant green or purple gloss, less marked on the throat than elsewhere. A brown band passes down the middle of the mantle from the hindneck to the back. The remainder of the mantle, the sides of the breast, and the upper portion of the breast are pure white. The lower portion of the breast and the whole abdomen are deep vinous chestnut, somewhat paler on the sides of the body, where the feathers are vermiculated with very narrow black lines, becoming broader on the flanks. There is a large patch of white on each side of the base of the tail. The under tail-coverts are black, the base vermiculated with white. The axillaries are pure white. The under wing-coverts are mostly white. The back is black, the feathers margined with pale fulvous. The shorter scapulars are white outside, black inside. The longer, inner scapulars are black, each feather with a white streak near the tip. The longer, outer scapulars are blue on the outer web, partly black and partly white on the inner. The rump and upper tail-coverts are deep black. The two middle tail-feathers are dark brown; the others white, with some brown along the shaft. The primaries are drab on the inner web, with a black tip; entirely dark brown on the outer web; the shafts white. The first two secondaries are black; the other outer secondaries are metallic green on the outer, black on the inner, web. The inner secondaries are black, all but the innermost, with a white streak at the tip. The upper wing-coverts are blue, the lower series broadly tipped with white, forming a band above the speculum.

Younger males have the white scapulars vermiculated and margined with brown, and many of the white feathers of the mantle mottled with brown.

Males approaching maturity have the forehead and crown black, but otherwise the head and the neck resemble the same parts in the female. The mantle is entirely brown; and the white sides of the breast are variegated with black and fulvous bars. The sides of the body are coarsely barred, not finely vermiculated, with black. In other respects these males resemble the adult males.

A male, evidently in the post-nuptial plumage, killed in October, resembles the female, but may be recognised at once by the pure blue of the upper wing-coverts, none of the feathers being margined with fulvous, as in the female; and by the plain black rump and upper tail-coverts.

The adult female has the forehead and crown dark brown, streaked with fulvous. The remainder of the head and the whole neck are fulvous, streaked with dark brown, except the throat. The mantle, back, scapulars, rump and upper tail-coverts are dark brown or blackish, each feather with a very distinct fulvous margin and an interior bar, parallel to the margin, of the same colour. The tail-feathers are brown with pale margins, and interior fulvous bars. The whole breast and the sides of the body are fulvous, each feather with one or more crescentic black bands. The abdomen is plain fulvous, with a chestnut tinge in parts, and the lowermost portion mottled with brown. The under tail-coverts are fulvous, streaked with brown. The axillaries are white, and the under wing-coverts are nearly entirely so. The upper wing-coverts are pale blue, each feather very narrowly margined with fulvous; the lower series tipped with white. The primaries resemble those of the male. Of the outer secondaries, the first four or five are plain black; the others metallic green on the outer, black on the inner, web. The inner, long secondaries are brown, with a white shaft-streak near the tip.

The above description refers, I think, to the old female. Younger females, instead of having the abdomen plain fulvous, have all the feathers of that part centred with brown. In many females there are streaks on the throat.

Male: length about 21; wing about 9½; tail 3½. Females: length about 18½; wing 8½; tail 3. The bill, in males, is black with a greyish tinge; in females, the upper mandible is brown, the lower dull orange. The irides vary from brown to yellow and reddish orange. The feet are red. Weight, up to nearly 2 lb.

112. THE WILD DUCK.

Anas boscas, LINNÆUS.

Outer web of the primaries blackish; inner web drab, with a blackish tip.
Axillaries pure white.
Speculum metallic purple between two double bands of black and white.
Bill of equal width throughout.

MALE :—Head and neck metallic green or purple; under tail-coverts black.

FEMALE :—Head and neck streaked with black and fulvous; under tail-coverts fulvous streaked with brown.

VERNACULAR NAMES :—*Nilsir*, *Niroji*, Upper India; *Lilgah*, *Lilg* (male), *Lilgahi*, *Lilgé* (female), Nepal.

THE Wild Duck or Mallard is a resident species in Kashmir and probably in other parts of the Himalayas. It is a winter visitor to the plains, being extremely abundant in the Western Punjab and Sind and comparatively rare in other parts, but extending considerably to the south.

Colonel J. M. Anderson, for instance, obtained this Duck at Nimar and at Aurungabad in the Deccan, and Colonel E. A. Butler observed three, and shot one, at Habli, about eighteen miles south-east of Belgaum. Dr. Jerdon recorded it from Mhow. Mr. Hume has noticed it twice in the Calcutta market. We may therefore presume, I think, that the Wild Duck will be found in winter in suitable localities throughout the country lying between the base of the Himalayas and the latitude of Belgaum.

This Duck is found throughout Assam, and Mr. Stuart Baker mentions several places in that province where it has occurred. Mr. F. Finn also records it from North Luckimpore. Farther south it has been met with in Sylhet, Cachar and Manipur. I have been told of its occurrence near Bhamo, and Namkhan, and also near Mandalay. Lieut. J. H. Whitehead, a most competent observer, has lately written to me that he has bagged the Wild Duck at Kengtung in the eastern part of the Shan States. We may gather from the above that this Duck has a considerable range in winter over the Indo-Burmese countries, but is everywhere a somewhat rare bird.

The Wild Duck has a very extensive distribution in the Northern Hemisphere, being found everywhere, according to season, from the Arctic Circle down to the Tropic of Cancer. Most of these Ducks no doubt go far north to breed, but where the conditions are favourable it is often a permanent resident even far south, as in Kashmir for instance.

The Mallard arrives in the northern parts of the plains of India about the middle of October and leaves again by the end of March or at latest by the middle of April. In the eastern part of the Empire it appears to be met with only during the coldest months, from December to February. Near the base of the Himalayas, birds of this species have been procured in July and August, and their breeding-quarters were probably close by.

The habits of the Wild Duck can be best described by a series of extracts from the writings of experienced observers who have had ample opportunities for studying this bird. And, first, as regards the species in India, I shall quote from Messrs. Hume and Marshall's "Game-birds":—

"In India, even in far north-west and in Sindh, where many hundreds may be met with in a day, the Mallard is rarely seen in large flocks, and is almost invariably in small knots of three to ten in number, or, towards the close of the season, in pairs. In the North-West Provinces they are usually met with in the larger jhils and broads, but in the Punjab and Sind they are equally common on the larger rivers and inland waters.

"With us they feed chiefly by night, often changing their ground for this purpose about dusk, though not with the regularity observable in the case of wild fowl at home, while during the day, at any rate between 10 a.m. and 3 p.m., they are, if undisturbed, almost always asleep. On our rivers, you find the party pretty close together, but not huddled into a lump like some other species, snoozing on the bank at the water's edge, while in broads you find them floating motionless in some secluded nook of pellucid water screened in by bulrushes and weeds, and often overhung by tamarisk or other trees.

"Compared with many other species they are tame and unsuspicious, or, perhaps I *should* say, unwary. With the most ordinary precautions you may always (where they are not much worried) make sure of some out of every party that you meet with."

Of the habits of the Wild Duck in England, Seebohm writes:—"The Mallard is probably the most numerous species of Duck, and the most gregarious. Sometimes enormous flocks may be seen in winter on the coasts, flying low over the water, especially about sunset, looking black against the red sky as with rapid flight they hurry to their feeding-grounds. These flocks consist principally of migratory Ducks from the cold north, and Pin-tail and Wigeon are often found consorting with Mallards. The flight of the latter species is very rapid and powerful, and each stroke of its wings is distinctly audible even at some distance. When disturbed from the water they soon get fairly on the wing and fly straight away, slowly wheeling round if necessary, so as to get up wind; but as they rise from the surface the direction of their flight forms a very small angle at first with the plane of the water, and this is also the case as they alight. As they approach the water, they skim with expanded wings, and drop feet first perpendicular into it, with depressed tail and fluttering wings. If a pair of Mallard are on the water the drake generally waits for the duck to get up first. They do not dive in search of food, but they sometimes do so in play, and frequently if wounded in the wing, or if pursued by a Hawk. The Mallard, in spite of the wonderful intelligence which it shows in its habits, and in spite of the excellence of its flesh when brought to table, is a great glutton. It may almost be said of this bird that it is omnivorous and never satisfied. No kind of animal life which is to be found in the water comes amiss to it, and few water-plants are safe from its voracity. On the banks it eats the juicy ends of grass and the buds of other weeds. In early morning, or during the day, after a shower, it repairs to the pastures to feed on the worms and slugs, or strays into the orchards to pick up fallen fruit. In autumn it enters the forest to devour the acorns under the oaks, or wanders over the stubble-fields to pick up the scattered grain. So eager is it to satisfy its appetite, that it can scarcely find an opportunity to roost during the day; and at night most of its time is occupied in sifting the mud on the banks of lakes and streams or on the sea-shore. To carry on this process scarcely any light is required; it may be heard feeding on very dark nights; the selection of the food which remains after the mud has been washed away through the lamellæ with which the edges of its bill are provided must be made entirely by feeling."

I string together some interesting remarks from Mr. Abel Chapman's "Bird-Life of the Borders":—"By nature the Mallard is essentially and absolutely a night-feeding bird (far more so than the Wigeon); is almost omnivorous in its taste, but with a partiality for fresh water if easily accessible; has a strong inclination to rest by day, but careless as to whether it rests ashore or afloat. Well aware of the danger of remaining inside harbour by day, the Mallards, with the Wigeon, take flight from their feeding grounds, as a rule, before a sign of daylight has appeared. Their most favoured resorts for whiling away the hours of daylight are either (1) on the open sea, opposite their feeding grounds if smooth, or, otherwise, some sheltered bay or roadstead along the coast, possibly several miles away; or (2) among the tidal channels and shallow backwaters, formed by the tide, in the sand-bars which inclose most large estuaries, or wildfowl resorts, both in this and other countries. . . . Considering the well-known fact that the Mallard is certainly one of the wildest and most watchful birds in existence, one singular fact has always struck the writer as being among the most inexplicable features in wildfowling—namely, the comparative ease with which these Ducks can often be approached in broad daylight in a gunning-punt. . . . Yet, strange to relate, the Mallards, the finest and most valuable fowl of them all, despite the experience of generations, do not yet seem fully to have learned to recognise the deadly nature of that low white craft. Time after time I have 'shoved' up to within sixty, even fifty, yards of their still unconscious flotilla, drifting slowly along on the tide, all inanimate and apparently asleep, hardly a head to be seen. Even after the cruel disappointment of a miss-fire they have not risen at once. Up go their necks, full stretch, at the snap of the cap, and their deep-toned and extremely eloquent 'q-u-a-r-k! q-u-a-r-k!' is barely audible, so gently and suspiciously is the alarm note sounded, but they do not rise till one has had *almost* time to replace the cap, but not quite."

Sir Ralph Payne-Gallwey observes in "The Fowler in Ireland":—"A mallard is not such an expert diver when wounded as is the female wild-duck; and will often foolishly waddle out on dry land, thus affording an easy chance to the fowler. The females, however, are gifted with far greater powers of deception, and can dive and hide well. They will creep slily to the shore, and there lie motionless among weeds or stones, till all but trodden underfoot by the searcher. Shore shooters have tried to convince me that the female wild-duck, when wounded, will remain under water, holding by the bill to aquatic plants or seaweed till drowned. They cannot, they say, otherwise account for losing sight of their wounded birds, as they often do. This idea is a fallacy, and is to be accounted for by the fact of the cripple having risen and dived at some spot towards which their eyes were not at the moment directed, and so crept away out of shot, or stolen to shore. Once near the land, they have the cunning to remain motionless, with but the bill and eye above water; at such times every shelter is taken advantage of, be it only a lump of floating weed, or tiny creek. This cunning is of great service to a duck when with young brood or eggs. At such times she will glide softly from the nest, and remain with only the bill above water in the neighbouring reeds and aquatic plants; or else, by diving and reappearing at a distance, endeavour to decoy the intruder from her precious charge."

I transcribe the following interesting notes from Mr. Stevenson's "Birds of Norfolk":—"It is seldom the wild duck is distressed for food, and even when frozen out, the supply of acorns, which are almost always to be had, even in snowy weather, proves a great attraction.

"A large number of wild duck nest every year in Norfolk, generally dispersed over the county; and, although the greater number are produced in the Broad district, there is scarcely a stream or piece of water of any extent which does not form a nursery for a brood or two at some time. Our sluggish rivers, meandering through a flat country, and in many places flanked by damp woods and cars, are a source of great attraction to these birds, but many nest on dry open heaths, at a distance of a couple of miles from any water, under the shelter of a whin bush or a clump of brakes, whence the old birds lead their young ones to the nearest water. . . . One curious circumstance in connection with the nesting of the wild duck is the frequency of the occurrence of pheasants' or partridges' eggs in their nests; many such instances have come under my observation, and I have frequently heard of others. The partridge occasionally makes use of the comfortable nest of the duck as a receptacle for its eggs, but not, I believe, so frequently as the pheasant. When the proud mother marshals her young ones, to conduct them to the water, great must be her surprise at the ugly ducklings which form part of her brood.

"Wild ducks frequently depart from their usual habit of nesting on the ground and make use of trees for the purpose. Instances are known where ducks' nests have been found twenty feet from the ground. In many cases the deserted nests of wood-pigeons are made use of; and a nest of the wild duck has actually been discovered in some ivy on the top of a wall."

In Kashmir the Wild Duck breeds in large numbers, laying in May and the beginning of June. It constructs its nest on the ground on the margins of lakes, or even in rice-fields, under an overhanging tuft of grass or rushes. The nest is composed of dry grass and flag, and after the eggs are laid it is lined with down. The number of eggs varies from eight to twelve.

The eggs of the Wild Duck are very variable in colour, and range between a dull pale green and a pale stone-colour. The shell is very smooth and has a faint gloss. In shape the eggs are nearly elliptical, one end being slightly pointed. They vary from 2·1 to 2·5 in length, and from 1·5 to 1·7 in breadth. The down is dark greyish brown with whitish centres, and pale inconspicuous tips.

The adult male has the whole head and neck brilliant metallic green or purple, the crown of the head and the hindneck less glossy and standing out distinct from the other parts. There is a narrow white collar at the base of the neck, not quite complete behind. The whole breast is a rich brownish chestnut, each feather margined with grey. The remaining lower plumage, including the sides of the body and the basal part of the under tail-coverts is grey, very finely and regularly vermiculated with ashy or brown. The terminal part of the under tail-coverts is black. The axillaries and the under wing-coverts are white. The mantle is brown, very finely vermiculated with grey. The back is brown, the feathers with pale margins, and some of them, on the lower back, mottled with black. The inner and outer margins of the scapulars are chocolate-brown, the central portion grey, the whole finely vermiculated with black and ashy. The rump and the upper tail-coverts are deep black. On either side of the upper tail-coverts there is a bunch of truncated feathers, broadly tipped with white, and generally concealed by the long flank-feathers. The four middle tail-feathers are black and curled up, the others are whitish, with the central portion more or less brown. The upper wing-coverts are greyish brown, the lower series tipped black, with a preceding white band. The inner web of the primaries and the shaft are drab with a brown tip; the outer web entirely brown. The first, and sometimes the second or third, secondary, are dark brown on the outer, paler brown on the inner, web, and tipped with white. The following ones have the outer web metallic purple with a double band of black and white at the tip; the inner web brown tipped with white. The first two or three inner secondaries next the speculum are rich brown on the outer web, grey on the inner; and the innermost secondaries are all grey.

Younger males have very broad margins to the feathers of the breast; and the whole abdomen is streaked with brown. Each of these brown streaks has a fulvous or buff margin on either side.

Males, in post-nuptial plumage, resemble the females closely, and are only to be distinguished by the black crown and a dark stripe through the eye.

The adult female has the chin, throat and foreneck plain fulvous. The remainder of the head and neck is closely streaked with narrow black and fulvous lines. The whole upper plumage, with the scapulars and upper tail-coverts, is dark brown or black, each feather margined and diagonally banded with fulvous. The tail-feathers are similar, but with whitish margins. The upper wing-coverts are brown, but otherwise the whole wing is quite similar to that of the male. The whole lower plumage is fulvous, marked with brown; the marks on the breast being crescentic, those on the abdomen elongated, spots, those on the sides of the body diagonal bands, and, finally, those on the under tail-coverts streaks. The axillaries and under wing-coverts are pure white. At times, the abdomen is plain or very slightly spotted.

Ducklings change into a first plumage which resembles that of the female, and young drakes soon begin to assume the plumage of the adult, which, however, is not quite attained in its fullest lustre till the third year.

Male: length about 23; wing about 11; tail about 4. Female: length about 21; wing about 10; tail 3¾. The bill is greenish yellow, with the nail blackish; the irides are brown; the legs orange. Weight, generally up to 3 lb, but occasionally up to 4 lb.

THE MARBLED DUCKS.

THE peculiar Duck which is the sole representative of this group is an inhabitant of dry, arid countries, and may be regarded as a desert form of Duck. Its coloration recalls to mind the coloration of the Sand-Grouse.

The Marbled Duck has the upper plumage spotted. This character, together with the barred under tail-coverts, suffices to distinguish it from all other Indian Ducks. The sexes hardly differ in colour, and there can be little doubt that the drake does not have a post-nuptial moult, the whole moult being accomplished in the autumn. The male is very slightly crested; in the female there is hardly a trace of a crest.

The speculum differs little in colour from the surrounding parts of the wing, which is weak in structure. The legs are feeble and the middle toe is hardly longer than the tarsus. The profile of the upper mandible is considerably concave; and the bill is of equal width throughout.

113. THE MARBLED DUCK.

Marmaronetta angustirostris, (MÉNÉTRIES).

Primaries nearly uniformly grey on both webs, with a silvery grey tinge on the outer web of the outer feathers.

Axillaries white, barred with brown near the tip.

Under tail-coverts barred across.

Upper plumage with large, roundish, pale buff spots.

MALE : With a blackish patch round the eye.

FEMALE : With a pale brown patch round the eye.

VERNACULAR NAMES :—None known.

THE Marbled Duck has been observed so frequently in Northern India that it may be considered a regular and common winter visitor.

Mr. Hume was the first to introduce this species to the Indian list. He found it abundant in suitable localities throughout Sind. Mr. Ross Knyvett procured it at Futtehgurh, in the North-West Provinces, in January, and the late Mr. A. Anderson got it in Oudh in March. Mr. G. Reid also observed it near Lucknow. Colonel Butler records it from Mount Abu and Northern Guzerat. Mr. Hume noticed two specimens in the Calcutta market, one in December and one in February. Lastly General J. H. McLeod informs us that he shot this species in the Bhauwulpur territory, and near Gurdaspur, in the Punjab.

It may therefore be safely asserted that this small Duck occurs over the whole of Northern India, from Sind to Bengal, and from the foot of the Himalayas down to at least the 22nd degree of north latitude.

This Duck occurs as a resident or a partial migrant in Portugal and Spain; the whole northern part of Africa, from the Canaries to Egypt; Southern Russia; Palestine; the Caspian Sea; Persia, and thence on to India. It is difficult to understand the movements of this Duck, and it is most probably more of a resident in most countries than is generally supposed; and it is not at all unlikely that ome birds of this species may remain in the north-western parts of India during the summer.

The Marbled Duck does not appear to be anywhere so common in the winter as it is in Sind, and to Mr. Hume we are indebted for nearly all we know regarding its ordinary winter habits.

He thus records his experiences of this Duck:—"In Sindh, where I had abundant opportunities of observing it, I found it invariably associated in large parties; its favourite haunts are broads thickly grown with rush, in which it feeds and sports, comparatively seldom showing itself in the open water. As a rule it does not at once rise when guns are fired, as the other Ducks do, but, if at the outside of the rush, scuttles into these for concealment, as a Coot would do, and if in them already, remains there perfectly quiet until the boats push within sixty or seventy yards of it; then it rises, generally one at a time, and even though fired at, not unfrequently again drops into the rush within a couple of hundred yards. When there has been a good deal of shooting on a lake, and almost all the other ducks, and with them, of course, *some* of these, are circling round and round high in the air, you still keep, as you push through the reeds and rushes, continually flushing the Marbled Duck, and the broad must be small, or the hunting very close and long continued, to induce all the Marbled Ducks to take wing. Of course, where there is little cover (though there you never meet with this Duck in large numbers) they rise and fly about with other ducks; but their tendency in these respects is rather coot-like than duck-like. Individuals may take wing at the first near shot, but the great majority of them stick to the rush as long as this is possible; and on two occasions I saw very pretty shooting, boats in line pushing up a wide extent of rush-grown water, and the Marbled Duck rising every minute in front of us at distances of sixty or seventy yards, like Partridges out of some of our great Norfolk turnip-fields; here and there a Shoveller, or a White-eyed Duck, both of which, when disturbed, cling a good deal to cover, would be flushed; but there were not one of these to ten of the Marbled Duck. This species is not amongst first-class ducks for the table; it ranks with the Shoveller and the White-eyed Duck, and after obtaining a goodly array of specimens, we never shot it, first-class Ducks, Gadwall, Mallard, and Pin-tail, as well as the Indian Canvas-back (*Aythya ferina*) being always available."

Subsequently he wrote :—"The flight of this species, though Teal-like, is less rapid and flexible (if I may coin an expression to represent the extreme facility with which that species turns and twists in the air) than that of the Common Teal. It more nearly resembles that of the Garganey, but is less powerful, and less rapid, even than that of this latter species. There is something of the Gadwall in it, but it wants the ease of this. It flies much lower, too, and, as already mentioned, much more readily re-settles after being disturbed. I have hardly ever seen them swimming in the open, and in the rushes they make, of course, slow progress. When wounded, they dive, but for no great distance, and then persistently hold on under water in any clump of rush or weed, with only their bills above water. I have never seen them on land in a wild state, but some captured birds, whose wings had been clipped, walked very lightly and easily; and, though they had been but a few days in confinement, they were very tame, and could, I should imagine, be easily domesticated.

"As a whole I consider them poor, rather sluggish ducks, very much disposed to take life easy, and in a *dolce far niente* style, and lacking in every line the vigour and energy that characterise races born and bred within the hardy north."

Regarding the nesting of this species in Spain, we have the following excellent note by Colonel Irby, as quoted by Mr. Dresser:—"In Andalucia this species is a summer migrant, arriving from March to May. I have heard of three having been killed late in February; but I myself first noticed it on the 23rd of March. They are tolerably numerous on the marismas and other suitable localities, where they remain to breed, leaving us again in September. I never saw any or heard of their occurrence here except between the dates above given. In 1871 I had two nests, with the eggs, brought to me, the female having been, in both cases, shot off the nest. Both these nests were found in the same small, circular, isolated patch of short, spiky rushes, not more than ten feet in diameter, and surrounded by dried mud. I went myselt to inspect the place, which is in that part of the marismas near the Coto del Rey, called Las Carnecerias, so termed because in former years the wolves used to kill the sheep there. The nests were formed of small broken bits of dried rushes mixed with a large quantity of down. One nest was taken on the 30th of May, and contained ten fresh eggs, and in the female was another ready for exclusion, which was broken in the fall of the bird. The other nest contained eleven fresh eggs, and was taken on the 7th of June. All these eggs are exactly similar in size and colour. In shape they are inclined to be elliptical, and are in colour yellowish white or buff."

Eleven eggs of this Duck in the British Museum, of which seven were taken by Colonel Irby on the 30th May, as above related, are uniformly of a deep cream-colour. They are as nearly as possible elliptical, very smooth and rather glossy. They measure from 1·65 to 1·95 in length, and from 1·25 to 1·4 in breadth.

In the adult male the forehead and the front part of the crown are dull white, cross-barred with black; the hinder part of the crown and the hindneck pale buff, cross-barred with black. There is a blackish patch round the eye extending to the ears. The sides of the head and neck, the chin, throat, and foreneck are white, streaked with brown. The mantle is greyish brown, each feather with a dark cross-band and a pale tip. The back and scapulars are dark greyish brown, each feather with a large pale buff spot at the tip. The feathers of the rump and the upper tail-coverts are greyish brown with darker centres and buff tips. The tail-feathers are greyish brown, the middle pair darker and with whitish tips. The wing-coverts are brownish grey with pale buff margins. The primaries are dark grey with brown tips; and a portion of the outer web of the first five, near the tip, silvery grey. The outer secondaries are paler grey, forming a speculum which is inconspicuous, but paler than the other parts of the wing. The inner, long secondaries are pale brown. The breast is greyish white with partially concealed brown bars. The abdomen is dull white. The under tail-coverts and the sides of the body are whitish barred with brown. The under wing-coverts are chiefly white, and the axillaries are white, barred with brown at the tip.

The adult female resembles the male, but has a much shorter crest, and is not barred on the hindneck. The patch round the eye is pale brown.

The young bird does not differ much from the adult female. It is of a rather lighter colour, and there are some fulvous tips on the lower plumage.

Male: length nearly 19; wing 8¼; tail 3½. Female: length about 17; wing barely 8; tail about 3. The bill is bluish grey, black on the tip and along the ridge of the upper mandible. The legs are horny brown with black webs. The irides are brown. Weight up to rather more than 1¼ lb.

THE PINK-HEADED DUCKS.

So far as is at present known, the Pink-Headed Duck, the sole representative of the group, is restricted to the Indian Empire. Judging from the general style of its plumage, and especially from the colour of the primaries, it seems to be allied to the Pochards, and to bear the same relationship to those Ducks that the Grey Ducks do to the True Ducks. It is noticeable that the lobe of the hind toe in the Pink-headed Duck is comparatively small, but this may be a modification to suit altered habits. Very little is known of the habits of this Duck, and I cannot learn whether this species is a diver, or a surface-swimming Duck. It will probably prove to be the former.

In the Pink-headed Duck, the sexes are not very dissimilar, and the differences chiefly lie in the coloration of the head. The bill is of equal width throughout, and the profile of the upper mandible is nearly straight. The head is not crested, but the feathers of the hindneck and back of the crown are slightly lengthened. The wings are weak, the secondaries being of considerable length. The middle toe is about half as long again as the tarsus.

114. THE PINK-HEADED DUCK.

Rhodonessa caryophyllacea, (LATHAM).

Outer primaries with the outer web much darker than the inner; inner primaries with both webs of the same pale vinous drab as the speculum; all tipped with dusky.

Axillaries brown, mottled with white.

Whole lower plumage, together with the sides of the body, of one uniform dark colour.

MALE : **Chin, throat, and foreneck black; crown of head pink.**

FEMALE : **Chin, throat and foreneck pink crown of head brown.**

VERNACULAR NAMES :—*Lal-sira*, *Golab Lal-sir*, Hind.; *Doomrar*, Nepal Terai; *Doomar*, Tirhoot; *Saknal*, Beng.

THE distribution of the Pink-headed Duck was for many years a matter of much uncertainty, but it is now fairly well known.

Commencing with the north-west portion

of India, this Duck has been found on several occasions near Delhi. It is not uncommon near Lucknow, and Colonel M. Tweedie met with a very large number of these Ducks a little north of Kheeri, in Oudh, in May.

Continuing along the north, we find that Hodgson observed this Duck in Nepal and Pemberton in Bhutan. It has been recorded from many parts of Bengal, and it is exposed for sale sometimes in the Calcutta market. Ball procured it at Sahibgunj on the Ganges, the Rajmehal Hills, Hazaribagh and Manbhum. Mr. J. H. Taylor observed it at Khorda, in Orissa, and it is found down the east coast as far, at least, as Madras.

On the west coast, the Rev. S. B. Fairbank observed this Duck in the vicinity of Khandala, near Bombay.

East of Bengal, the species occurs, according to Mr. Hume, throughout the Assam valley up to Sadiya. It also occurs in Sylhet and Manipur. According to Blyth, it has been obtained near Bhamo and also in Arrakan. My friend Mr. E. Gabbett informs me that four of these Ducks were shot near Mandalay, and that he examined the birds and was sure of their identity.

There is no country outside the limits of the Indian Empire from which the Pink-headed Duck has been recorded, and it is therefore probable that it is restricted to the Empire, being migratory to a small extent according to climate and rainfall.

Mr. Frank B. Simson has written an interesting account of this Duck in the "Ibis," and as it was published after the issue of Messrs. Hume and Marshall's work, and is not referred to in Mr. Stuart Baker's account of this species in a recent volume of the Journal of the Natural History Society of Bombay, I shall reproduce it nearly in full. He says:—"The Pink-headed Duck is a bird little known to the Bengal sportsman and ornithologist, and considered rare. It is, however, far from uncommon in a restricted area of Bengal, and may be said to make its home in the southern part of the district of Purneah, and in the country which borders the left or northern bank of the Ganges, between the Coosy River, which separates Purneah from Bhaugulpore, and in the Maldah district. It is found more sparingly in Bhaugulpore and Tirhoot, and occasionally in likely places in the North-Western Provinces and in Upper India. Jerdon records it from Madras, though he never saw it in the flesh there. Specimens have been obtained in the Calcutta bazaar, which has yielded more ornithological rarities than any single place in India. Colonel Irby tells me he met with it, and this can be relied on. But many people in Bengal have told me that they had shot it in various places; nevertheless, whenever I could test these statements, I never found that any such Duck had been killed lower in Eastern Bengal than Maldah. The birds called Pink-headed always turned out to be Red-crested Pochards.

"The country mentioned on the north of the Ganges which I have referred to as the home of this Duck is alluvial, and consists of vast, extensive, and much-neglected plains, studded at considerable intervals with small poor villages, intersected with very deep clear streams, all running to the Ganges and abounding in crocodiles. These plains are difficult to cross on foot in the dry season, except by paths which cannot be called roads; elephants are generally used by all but the poor to travel with across these wastes, which are often inundated when the

Ganges rises high. To such an extent do these inundations occasionally prevail that the human inhabitants are compelled to take to boats, while the deer and game generally resort to the few highest spots, where they are often slaughtered. The tigers have even been known to live for a time in trees, where, apparently, they feed on turtles, small crocodiles, and dead animals which come floating near the trees.

"Scattered among these plains are pools of deep water, extending over areas of from ten to forty acres, abounding in wild fowl and crocodiles, surrounded by very high grass with stalks like thin bamboo. A few stumpy trees, hidgels and others, grow in this grass, the pools are covered with beautiful lotus plants, and here the Pink-headed Duck resorts at all seasons of the year. . . .

"One morning in May, very early, I was standing, almost without clothes, at the door of a travelling bungalow on the trunk-road in Purneah, watching two Florikens with a binocular as they wheeled about in the sky, when about a dozen dark Ducks, with lovely, rosy, light-coloured feathers under their wings, alighted in a tank close by. I immediately got my gun, and fortunately was able to get close and bag two. After this I was always on the look-out, and shot numbers of them before I left that part of Bengal.

"Dr. Jerdon visited me while I was stationed at Purneah, and told me he had never seen the bird alive, and that the picture in his illustrations was drawn from a dried skin. I promised to show him and get him some specimens, and I did so in this wise. We were both at a shooting-party given by that hospitable planter and owner of Kolassy, so well known and liked in Purneah, and were shooting with a long line of elephants, looking for that wonderful tiger which is always there when no one has a gun or wants him, and always somewhere else when made an object of special pursuit. In default of this tiger we shot buffaloes, deer, Floriken, and Partridges, and shouted at hogs which were reserved for the spear. Whilst going on I marked a small party of Pink-headed Ducks into one of the pools I have described, and immediately told Jerdon that if he would leave the party and come with me I thought I could get a nice shot at his long-coveted birds. So we took four elephants and started.

"Of course, with noisy splashing animals, any approach to Ducks was impossible; on the other hand the pool was full of huge crocodiles: we could see them with our glasses. However, I agreed to go on foot, the elephants to come to me the moment the shots were fired. I passed through the tall bamboo-grass in water deepening until it was nearly up to my waist till I came to the edge, and found myself about twenty yards from ten or a dozen of the Ducks. They were not sitting close together, so I shot the finest with one barrel, and another as they rose, and I made off to the elephants as hard as I could. . . .

"The Duck's plumage is fully described by Jerdon and Hume; I need only refer here to its habits. It lives in this country all the year round; generally it is found in small flocks of from eight to twelve: probably these are the old birds and the young ones of the year. It never associates, so far as I saw, with other Ducks, nor gets into large flocks. In the breeding season it pairs and nests in short grass on dry land at some distance from the pools. I have seen the eggs, but cannot now describe them. I have had the young ones brought to me, and should think they could be easily domesticated, for the bird seems exactly like the Mallard, except in size and plumage. I have never met with the bird far from these plains, and I remarked its absence when shooting at the foot of the Himalaya lowest ranges in the north of Purneah. The taste of this Duck when cooked is inferior; indeed, I prefer every other Duck save the Shoveller to it, and consider it worse than the Brahminy Duck or Whistling Teal.

"There are many reasons why the Pink-headed Duck is not well known. One I have just given, viz., that it is poor on the table; another is that it is never very numerous nor goes in flocks; the native shikarrie can never kill a lot at one shot, nor net a large number. The sahib can never get many shots in one day, nor is his prize when gained so valuable to him as the other Ducks, which are so much more numerous, and so much better to eat. It does not associate much with other Ducks, but keeps rather to itself, and seldom is seen flying to the feeding-ground before sunset, but stays all day in the pools, where it lives till disturbed. But if a person residing in Purneah, Bhaugulpur, or

Maldah, chooses to make the bird an object of special pursuit, he should have no difficulty in procuring as many as would be necessary."

To the above, I may add some notes published by Mr. F. A. Shillingford in the "Asian" some years ago. He writes:—"During the cold weather, November to March, the Pink-headers remain in flocks varying from six to thirty, or even forty birds, in the lagoons adjoining the larger rivers, and have been observed by myself in considerable numbers in the southern and western portions of the district, that portion of Eastern Bhaugalpur which lies immediately to the north of the river Ganges and south-western parts of Maldah. They come up to the central or higher parts of the Purneah district in pairs, during the month of April, begin to build in May, and their eggs may be found in June and July. The nests are well formed (made of dry grass interspersed with a few feathers), perfectly circular in shape, about nine inches in diameter and four or five inches deep, with three- to four-inch walls, and have no special lining. The nests are placed in the centre of tufts of tall grass, well hidden and difficult to find, generally not more than five hundred yards from water. They lay from five to ten eggs in a nest. Both the male and female have been started simultaneously from the vicinity of the nest, but whether the former assists in incubation is uncertain, though judging from the loss of weight during the breeding season, the male must be in constant attendance at the nest."

The call of this Duck, according to the same writer, resembles that of the Mallard, with a slight musical ring about it. The stomach of a specimen which Mr. Shillingford examined contained water weeds and various kinds of small shells.

Jerdon, who was perhaps as well acquainted with this Duck as any one, writes:—"It shows a decided preference for tanks and jheels well sheltered by overhanging bushes, or abounding in dense reeds, and in such places it may be found in the cold season in flocks of twenty or so occasionally, but generally in smaller parties of from four to eight. During the heat of the day it generally remains near the middle of the tank or jheel, and is somewhat shy and wary."

The eggs of this Duck are very remarkable. They are extremely smooth and polished, and very nearly spherical in shape. In colour they are a pale yellowish cream-colour. The five eggs in the Hume collection, presented by Mr. Shillingford, measure from 1·71 to 1·82 in length and from 1·61 to 1·7 in breadth. Four of these eggs were taken in the Purneah District on the 3rd July, 1880. The fifth egg was taken in the same locality, but is without date.

The adult male has the chin, the throat, the front of the neck, and the whole lower plumage, together with the sides of the body, of one uniform chocolate-brown. The whole head, the hindneck and sides of the neck are rosy pink. The whole upper plumage, scapulars and tail are dark brown or blackish, the back and scapulars with some grey speckles or vermiculations. The margin of the wing is broadly white. The upper wing-coverts are brown. The outer webs of the outer primaries are brown; the inner, pale drab on the half next the shaft, white on the other half, and tipped dusky. The inner primaries are vinous drab on both webs and tipped dusky; the inner edge more or less white. The outer secondaries are vinous drab on the outer web, with white tips and concealed white bases; entirely white on the inner web. The inner secondaries are glossy brown, those immediately following the speculum with a narrow, black margin on the outer web. The under wing-coverts are pinkish white; the axillaries brown, mottled with white at their base.

According to Jerdon, the male at the breeding season has the crown of a richer pink than the other parts of the head.

The adult female, in most respects, resembles the adult male. The body plumage and the wings are, however, rather paler. The chin, the throat, and the front of the neck, instead of being brown, as in the male, are pink, like the sides of the head. A broad brown band occupies the forehead, the crown and back of the head. Many of the feathers of the body are margined paler.

The young birds of both sexes appear to assume a first plumage which closely resembles that of the adult female.

The sexes are of much the same size. Length about 23; wing about 10; tail about 3½. The bill is reddish white, dirty red or light pink; irides red; legs and feet varying from slate-colour to blackish. The weight appears to run up to rather more than 2 lb.

THE POCHARDS.

The Pochards form a large group of Ducks which from their peculiar habits are termed Diving Ducks. Their conformation especially fits them for moving under water, their legs being placed further back than in the ordinary Ducks, and the toes being of great length as compared with the tarsus. The lobe on the hindtoe is also of much larger size than in the surface-swimming Ducks.

The Pochards are widely distributed, but there is no species likely to be found in India in addition to the four species here noticed. The Pochards differ from the Scaup Ducks in having a more slender bill, and in having quite a different pattern of colour on the primaries.

The Pochards occurring in India may be divided into two sections. The first, *Netta*, containing only the Red-crested Pochard, may be known by the following characters: both sexes have an ample crest; the bill is entirely or largely red, diminishing in width from the base to the tip; and the sexes differ very much in colour. The members of the second section, *Nyroca*, have no crest; the bill is of a dark colour, without any red, and is of about equal width throughout its length, or rather broader near the tip than at the base; and the sexes, though differing in colour in some degree, retain the same pattern of plumage.

The Pochards have a shorter wing than the ordinary Ducks, and when flying they make a distinct rushing sound, easily recognised. They possess the power of partially submerging the body when an enemy is in view.

I reproduce the following useful remarks by Mr. Abel Chapman on the general habits of the Diving-Ducks:—"From the nature of their avocations, the Diving-Ducks are almost entirely day-feeding fowl, as they require light for their subaqueous investigations. Those which prey on animal food—living crustacea and other creatures which require catching—are exclusively diurnal in their habits; but one or two species, such as the Pochard, whose food consists of grass and vegetable substances, exhibit nocturnal proclivities. In the main, however, the Diving-Ducks are of diurnal habits, and are met with during the day inside the harbours or estuaries; in short, they occupy by day the situations then vacated by the nocturnal Game-Ducks."

115. THE RED-CRESTED POCHARD.

Netta rufina, (PALLAS).

Outer primaries with the outer web much darker than the inner; inner primaries with both webs of the same white or pale grey colour as the speculum; all tipped dusky.

Axillaries white.

Bill partially or entirely red, narrower near the tip than at the base.

Head fully crested.

MALE :—Lower plumage, from the lower neck to the tail, dark glossy brown; sides of the body largely white.

FEMALE :—Lower plumage, from the bill to the tail, uniform dull white or pale grey; sides of the body brown.

VERNACULAR NAMES :—*Lall-chonch*, *Lall-sir*, Hind.; *Rattoba*, *Ratoha*, Sind; *Doomer*, male, *Sunwa*, female, Nepal; *Hero-hans*, male, *Chobra-hans*, female, Beng.

THE Red-crested Pochard is a winter visitor to a large portion of the Indian Empire. In the northern half of the

Indian peninsula this species is rather common, but in the southern half it is a somewhat rare bird, although distributed over the whole area, extending even to Ceylon. With regard to its occurrence in this island, Mr. E. L. Layard, although he did not actually procure a specimen, says, "I am as sure of it as one can be of anything in this world."

This Pochard does not appear to have been recorded from Kashmir, but it must, most certainly, occur in that country, for it lies between the summer and winter quarters of this species; it moreover occurs in winter in the Himalayas, certainly as far east as Nepal.

The Red-crested Pochard extends throughout Bengal, and is frequently to be seen for sale in the Calcutta market. It is found throughout Assam, up to the extreme eastern point of that province. Mr. Hume observed this species at the Logtak lake in Manipur, and there is no reason to doubt the accuracy of Blyth's statement that he received it from Bhamo. None of my numerous friends, however, in Upper Burma or the Shan States has met with it in those regions, and probably it is not found south of the second defile of the Irrawaddy river.

This Pochard has a very considerable range in the temperate zone, but does not generally pass north of the 50th degree of latitude. Some birds of this species appear to be resident in Spain, the countries bordering on the Mediterranean, Black and Caspian Seas, and in Turkestan. Most Pochards of this species, however, migrate northwards in the spring for nesting purposes, and move southwards on the approach of winter, a vast number visiting India, which is probably their winter headquarters. This Pochard is not found far to the eastward, but in the British Museum there is a specimen from Lobnor and another from some part of China, probably the western portion of that country.

I can find very few original notes about the habits of the Red-crested Pochard, and I have never observed the bird myself. I shall therefore give some extracts from Messrs. Hume and Marshall's "Game Birds." Mr. Hume says :—" When much molested they are shy and very difficult to work, but fresh fowl that have not been before shot at that season, can always be easily approached within swivel range, though they usually keep outside the limits of efficiency of ordinary fowling pieces." Referring to the erroneous statement made by Mr. Dresser, that this Duck does not dive but feeds like the Mallard by merely bobbing the front part of its body under water, Mr. Hume continues:—"The fact is, that though you *may*, at times, see it dibbling about the water like Teal and Shovellers, or again feeding as he describes, its normal habit and practice *is* to dive, and I have watched flocks of them, scores of times, diving, for an hour at a time, with a pertinacity and energy unsurpassed by any other wild fowl. Examine closely their favourite haunts, and you will find these to be almost invariably just those waters in which they *must* dive for their food. Deep broads, where the feathery waterweed beds do not reach within several feet of the surface, not the comparatively shallow ones, where the same weeds (the character of their leaves, however, changed by emergence) lie in thick masses coiled along the surface. . . . Though constantly seen feeding by day, when in suitable situations, they also feed a good deal during the night, and those whose day quarters happen for the time to be waters that yield little food, leave these at dusk for more prolific haunts. Perhaps they mostly move at that time; certainly you very commonly shoot them when out flighting, and at that time they are usually in pairs or small parties, very rarely in large flocks.

"They are strong but heavy fliers, and they are slow in getting under weigh: but for some reason which I have failed to discover (for in daylight they do not rise very perpendicularly), they are very seldom caught in the standing net.

"On the whole, taking them all round, they are perhaps the most troublesome fowl to work, as they are certainly, in my opinion, the handsomest that we have much to do with in India; and there is no species that I have more often watched or more closely studied.

"I have sometimes found them out of the water, on the land, a yard or two from the water's edge, grazing and picking up small shells and insects, and they then walk better than the other Pochards; but it is rare to *see* them thus, though from the frequency with which they are caught along with Gadwall and other Ducks by fall-nets on baited sward, it is probable that during the night they more readily leave the water.

"Their call-note, not very often heard

by day unless they are alarmed, is quite of the Pochard character—not the quack of a duck, but a deep grating *kurr*. Occasionally the males only, I think, emit a sharp sibilant note—a sort of whistle, quite different from that of the Wigeon, and yet somewhat reminding one of that. . . .

"As a rule, these birds are always in mixed flocks, and I have never seen any party consisting only of females; but I have, perhaps a dozen times in my life, come across flocks (one of them numbering fully fifty individuals) composed of adult males only.

"I have forgotten to notice their very characteristic wing-rustle, which, though resembling that of the Pochard, is louder and harsher; their wings are short, and rapidly agitated make a very distinct, palpitating, rushing sound, by which even a single bird, passing anywhere near one in the stillness of the night, can generally be recognised."

I cannot find any recent account of the breeding of the Red-crested Pochard. In the British Museum there are eggs of this species taken in Spain, Algeria, and on the Danube. Of the Algerian eggs, taken on June 9th, 1857, Salvin wrote long ago:—"In the open pools at the upper end of the marsh of Zana, I used frequently to see several pairs of the Red-crested Duck. Two nests only were obtained. The second lot, consisting of seven eggs, were of a most brilliant fresh-green colour when unblown; the contents were no sooner expelled, and the egg dry, than the delicate tints were gone, and their beauty sadly diminished."

The eggs are nearly truly elliptical, very smooth, and fairly glossy. In colour they are a pale delicate green. They measure from 2·3 to 2·45 in length and from 1·55 to 1·75 in breadth.

The adult male has the forehead, crown and crest cinnamon; the whole of the sides of the head, the chin, throat, and the sides and front of the upper neck rich vinous chestnut. The hindneck and the sides and front of the lower neck are black, the feathers short and of a velvety texture. The upper part of the mantle, the sides of the breast, and the lower plumage are glossy dark brown. A very large white patch occupies nearly the whole of the side of the body, and the black feathers margining this patch are more or less vermiculated with white. The lower part of the mantle and the whole back are pale drab-brown, many of the feathers next the black part of the mantle being vermiculated with white. The rump and the upper tail-coverts are black.

The outer web of the tail-feathers is brown, the inner whitish. The scapulars are light drab-brown, the bases white, forming a large patch. The margin of the wing is broadly white. The upper wing-coverts and the long inner secondaries are greyish brown. The outer primaries are white on the inner web, the tip black; dark brown on the outer web, more or less paler near the shaft. The inner primaries are white on both webs, the tips black. The outer secondaries are white, or very pale grey, with a blackish band near the tip, and a narrow, white, terminal margin. The following two or three secondaries are pale ashy brown, with a very narrow and indistinct darker margin on the outer web. The under wing-coverts and the axillaries are white.

The adult female has the forehead, the crown, the hindneck and a small space under the eye, rich brown. The remainder of the head and neck is pale ashy grey. The whole lower plumage is dull white or pale grey, the centres of the feathers slightly darker, causing a somewhat mottled appearance. The sides of the body are pale brown. The axillaries are white ; the under wing-coverts greyish. The back, the upper wing-coverts, the inner secondaries and the upper tail-coverts are of a pale drab-brown, very similar to the same parts in the male. The scapulars are lighter, and the rump darker, brown. All the feathers of the upper plumage are more or less margined paler. The quills of the wing are similar to those of the male, but the light parts of the primaries and secondaries are a darker grey. The tail is brown, with the outer feathers whitish.

In post-nuptial plumage, the drake is said to be very similar to the duck, but may be distinguished by the brighter colour of the bill and eyelids, by the larger crest, by the darker colour of the lower plumage, and by the redder colour of the feet.

Ducklings change from down into a plumage resembling that of the female, but very soon after the change the young drake commences to assume some black feathers on the mantle and breast, by means of which it may be easily recognised and distinguished from the female.

Adult males, after the autumn moult, have the feathers of the dark parts of the plumage margined with pale fringes, which wear away in the course of the winter. In the spring, the under wing-coverts and the large white patch on the sides of the body become tinged with pink.

Male: length about 21; wing 10½; tail 3. Female: length about 20; wing 10; tail 2¾. The male has the bill crimson, with the nail pinkish; the female has the bill blackish, with the tip and sides red. The irides vary from brown to red, according to age. The legs vary from yellowish brown to orange-brown, the webs blackish. Weight up to rather more than 2¾ lb.

116. THE POCHARD.

Nyroca ferina, (LINNÆUS).

Outer primaries with the outer web much darker than the inner; inner primaries with both webs of the same ashy grey as the speculum; all tipped dusky.

Axillaries white.

Bill dark, with no trace of red; of about equal width throughout.

Abdomen and breast of different colour.

Back and scapulars distinctly vermiculated.

Under tail-coverts never pure white.

MALE :—**Head and neck rich chestnut; mantle black.**

FEMALE :—**Head, neck, and mantle, dull reddish brown.**

VERNACULAR NAMES :—*Boorar nur*, *Lal-sir*, Hind.; *Rutubah*, Sind.; *Cheoon*, Nepal; *Lall muriya*, Beng.; *Thordingnam*, Manipur.

THE Pochard occurs as a winter visitor in all parts of the Indian peninsula, from the Punjab and Sind to Bengal, and from the Himalayas down to about the latitude of Bellary (15°), being common in the north and rare in the south. It occurs throughout Assam, and has been observed in Chittagong and Manipur. It extends south to Mandalay, where my friend, Captain T. S. Johnson, with his party, once obtained three Pochards in a miscellaneous bag of 562 Ducks and Geese.

The Pochard has a wide range, but is comparatively seldom found far north. It occurs over almost the whole of Europe, in a considerable portion of Northern Africa and throughout Southern and Central Asia, from the Red Sea to China, and from about the 14th or 15th degree of north latitude up to about the 60th degree. In this large area, it is more or less migratory, according to season.

The Pochard arrives in the north of India about the beginning of November, although a few birds may be met with in October. It appears to be quite common in many parts throughout March, and it probably leaves at the commencement of April. I can find no precise information on this point, and perhaps the time of departure does not differ much from that of other migratory Ducks in India.

As usual, Mr. Hume's account of the

habits of this species is excellent. He says:—"What the Pochard really likes is a large broad or mere, surrounded by rushes, reeds, and aquatic plants, some feet in depth, and with a *considerable* breadth of open water in the centre. Elsewhere you may meet a few, as on the banks of rivers, or in any kind of lake, even the Sambhar; but in such localities as I have indicated you will see flocks of several thousands, and many acres of water completely paved over with them. Habitually this species goes about in large flocks, but in places unsuited to its tastes you will meet with single birds or small parties.

"The Pochards are eminently swimming and diving ducks; 'their path is o'er the glittering wave, their home is on the deep.' They walk badly; indeed it is very seldom one sees them on land; but I have once or twice surprised them feeding in wild rice in the early mornings, and have been struck by the awkwardness of their gait. Their flight is slow and heavy until they get well on the wing, after which it is fairly rapid; but they rise with some little difficulty in perfectly calm weather, and always, if there be a wind, against it if possible.

"They swim very rapidly and gracefully; as a rule, rather deep in the water, but at times, especially when a lot are at play together, for a minute or two quite high, as if barely resting on the water. They are very playful, and skirmish about together, chasing each other, scuttling along on the surface one moment, out of sight the next. They are grand divers; like all the Pochards they have the hind-toe more webbed (though this is slightly less marked in this species and the White-eye than in the Scaup, etc.) than the True Ducks and Teal have, and it is doubtless partly this which makes them such good divers.

"Of course, with their diving powers, wounded birds give a grand chase; but they are not quite such adepts at disappearing altogether as the White-eye; and, as they are more generally shot in open water, it is less common to lose them.

"Their note, rarely heard until they are disturbed, is very like that of the White-eye, but louder and harsher—a *kurr*, *kurr*; but their wing rustle is far more characteristic, and I have rarely failed to recognise them by it, when I have shot them at night, before they came to hand."

Sir Ralph Payne-Gallwey thus cautions the sportsman who is after Pochards :—

"After a shot, never pass Pochards that may appear nearly dead, in pursuit of those more lively. Whilst you are chasing the latter, the others will often revive and disappear. Failing to overtake the strong cripples, you perhaps turn back, with the consoling thought that the others are easily to be found. Never was hope more delusive: they are the hardiest of fowl, and scarcely feel a blow that would kill a Mallard."

Although there are eggs of this Duck in the British Museum which were taken in Russia, I cannot find any account of the breeding of this species either in Russia or in any other part of Europe except Great Britain. In England this bird breeds in some localities where it is carefully protected. I shall, therefore, give a few notes regarding the breeding of the Pochard in England.

Mr. James H. Tuke, as quoted by Mr. Hewitson, says :—"Whilst at Scarborough about the middle of June last year, Mr. Bean informed me that several pairs of Red-headed Ducks, as the gamekeeper called them, had been seen upon a piece of water a few miles from Scarborough, and that he was going the next day to see if he could find their nests. I had the pleasure of accompanying him, and sure enough several pairs of Pochards flew up from their reedy habitation as we passed our boat up amongst the tufts of grass and long reeds which at one end of the lake form a bog of many acres in extent, almost inaccessible, for between these tufts of treacherous grass the water is some feet deep; it was with the greatest difficulty we managed to jump from one of these tufts to another. Whilst beating about amongst this herbage, a female Pochard flew up almost close to us, and in a short time the gamekeeper, who was with us, found a nest lined with feathers, and rather under the shade of a bush of Myrica gale, which grows plentifully in this bog. I had the pleasure of seeing the nest, but unfortunately there were no eggs."

Professor A. Newton, writing of the Pochards on the estate of Lord Walsingham, in Norfolk, remarks:—"Of the nests seen by me, one was built on sedge growing in the water; but the others were on the land, though so close to the margin that the bird could slip into the water in less time than it takes to say so."

The eggs of the Pochard sometimes number as many as thirteen. Though generally truly elliptical in shape, some eggs are rather pointed at one end. The shell is smooth and has a fair amount of gloss. In colour they are uniformly of a greenish grey or greenish stone-colour. They measure from 2·2 to 2·45 in length and from 1·65 to 1·75 in breadth. The down is greyish brown with large whitish centres.

The adult male, with the exception of a small white spot on the chin, has the whole head and neck rich chestnut. The mantle is black. The breast is dark slaty brown, the feathers with a rufous margin and some indistinct black vermiculations. The abdomen and the sides of the body are pale grey, the former very finely vermiculated with black; the latter, more coarsely. The under tail-coverts are black. The back, the scapulars,. the innermost secondaries and the upper wing-coverts are grey, very finely vermiculated with blackish lines. The rump and the upper tail-coverts are black; the tail grey, freckled with dusky. The outer primaries are ashy grey on the inner web, which is tipped with dark brown; dark brown on the outer web, becoming paler near the shaft. The inner primaries are ashy grey on both webs and tipped with dark brown. The secondaries are ashy grey, the outer web freckled with dusky, and both webs tipped with white. Sometimes the dusky freckles are replaced by an indistinct dark band in front of the white terminal margin. The secondaries on the inner side of the speculum are narrowly margined with dusky on the outer web. The axillaries are white and the under wing-coverts nearly entirely so.

The adult female has the head, the neck and the mantle dull reddish brown, dark on the crown, light and frequently almost whitish on the throat and the sides of the head. The breast is very dull reddish brown, each feather margined with grey or yellowish brown. The remaining lower plumage is brownish grey, becoming darker towards the tail and vermiculated with brown on the lower part of the abdomen and the sides of the body. The back and the scapulars are brown vermiculated with grey. The wing resembles that of the adult male, but there is hardly a trace of vermiculations on the coverts. The rump and the upper tail-coverts are dark brown speckled with grey; the tail dark brown. The axillaries are white and the under wing-coverts nearly entirely so.

The adult male in the post-nuptial plumage resembles the female so closely that it can hardly be separated by any definite characters.

Ducklings of both sexes change from down into a first plumage which resembles that of the adult female. Many of the feathers, however, of the upper plumage have paler margins, and the sides of the body are not vermiculated. The young drake assumes the plumage of the old male by a gradual series of changes.

Male: length about 18; wing 8¼; tail about 2½. Female: length about 17½; wing 8; tail 2¼. The bill is black at the base and the tip, bluish in the middle; irides orange-yellow; legs and feet leaden grey. Weight up to rather more than 2¼ lb.

117. THE WESTERN WHITE-EYED POCHARD.

Nyroca nyroca, (GÜLDENSTADT).*

Outer primaries with the outer web much darker than the inner; inner primaries with both webs white, like the speculum; all tipped dusky.

Axillaries white, mottled with brown at tip.

Bill dark, with no trace of red; of about equal width throughout.

Under tail-coverts pure white.

Head and neck chestnut or reddish brown.

MALE:—Head and neck rich chestnut with a dark collar on the lower neck.

FEMALE:—Head and neck reddish brown with no trace of a collar on the lower neck.

VERNACULAR NAMES:—*Karchiya*, *Boorarmada*, Hind.; *Burnu*, Sind.; *Malac*, Nepal Terai; *Lal-bigri*, *Bhooti-hans*, Bengal.

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* *Nyroca africana* of the British Museum Catalogue.

This species and the next have not been discriminated by Indian naturalists and sportsmen till quite recently. We owe it to Mr. F. Finn that we now know that both species occur within the Indian Empire.

Messrs. Hume and Marshall did not suspect that the Eastern species occurred in India, and they do not refer to it even incidentally. It is therefore quite impossible to state even approximately what the distribution of the two species in India is. Inasmuch, however, as Mr. Finn informs us that both species of the White-eyed Pochard are equally numerous in the Calcutta bazaar for a short time after their first appearance, I shall as a matter of convenience assume that the longitude of Calcutta divides the range of the two birds and leave it to sportsmen hereafter to put us right regarding the exact distribution of these Pochards. They are very distinct species, and from the characters I have given, it will be seen that the females are quite as easy to separate as the males. There ought to be no difficulty about these birds in the future.

On the assumption, therefore, that the present species, the Western White-eyed

Pochard, is restricted to the Indian peninsula, west of the longitude of Calcutta, we find that its range extends throughout the Himalayas from Kashmir to Sikhim and southwards to about the 14th degree of north latitude; the lowest point from which I can find this species recorded being Honawar, on the west coast, where Mr. J. Davidson procured a specimen in December (Bombay Nat. History Society's Journal, xii., p. 72).

In Kashmir, and probably in many parts of the Himalayas, this species is to a great extent a resident; but in the plains it is a winter visitor, arriving in the northern parts at the end of October and leaving again in March.

Out of India, this Pochard has a wide distribution, but is a bird of temperate climates, not being found far to the north. It extends from Central Europe (it has, however, been met with in Great Britain) to the valley of the Ob river in Siberia, its northern limit being approximately indicated by the 60th degree of latitude. In many parts of its range, this Pochard is a permanent resident. In the winter this species is met with over a large portion of Northern Africa and South-Western Asia, as well as in Europe and Central Asia.

The Western White-eyed Pochard is entirely a fresh-water bird, and I cannot find that it has ever been observed on the sea-coast. I shall let Mr. Hume speak of its habits, as European observers have written very little indeed regarding this Duck. He says :—

"Unquestionably weedy lakes and broads, containing moderately deep water, are its favourite haunts in this country; but I have occasionally met with it on river banks, small ponds, and even utterly bare shallow sheets of water, like the Sambhar Lake.

"It is seldom *seen* in the open water, and I have never seen any very huge flocks; but while I have often met with pairs and small parties of from three to seven on small tarns and ponds, I have put up successively many hundreds from different parts of large rushy, reedy lakes. Not *en masse*, but successively, for it is a characteristic of this Duck to cling to cover and rise singly, or in twos and threes, and only when compelled to do so.

"When on the wing the flight of this species is fairly, but by no means very, rapid. They rise with some little difficulty, and always by preference against the wind (indeed when there is no wind they are slow in getting under weigh). If flushed from water, they strike it repeatedly as they rise with their feet, much after the fashion of Coots, but in a less exaggerated style. Rising out of the reeds, they fluster up and go off much like Partridges, with a low, straight flight, often dropping suddenly, almost Quail-like, after a short flight.

"On land, one never sees them many paces distant from the water's edge, and running down to it, they shuffle along most clumsily.

"In the water they are at home; they swim with great rapidity and dive marvellously. Indeed, what becomes of them is often a puzzle : the instant that, wounded, they touch the water, they disappear, and not unfrequently that is the last you see of them ; at most they only rise once or twice, and then disappear for good. It is waste of time to pursue them; if they do rise, give them instantly a second barrel.

"I have often, when lying up hid in the reeds, waiting for more valuable fowl to come over, watched little parties of them feeding in some tiny, weedy, reed-hedged opening. Part of the time they swim about nibbling at the herbage or picking shells or insects off the lotus leaves; but they are continually disappearing below the surface, often reappearing with a whole bunch of feathery, slimy weed, which all present join in gobbling up. Sometimes they remain a very long time out of sight—I should guess nearly two minutes (it seems an age)—but generally they do not, when thus feeding, keep under more than say forty to fifty seconds.

"I fancy that they feed preferentially by day; first, because when in their favourite haunts I have invariably found them, when I have had opportunities of watching them unperceived, busy feeding at all hours, and never asleep, as night-feeding Ducks so constantly are, between 11 a.m. and 3 p.m.; and, secondly, because I have so rarely killed them when flight shooting. When settled on some comfortable, rush-embosomed, weed-interwoven broad, I am pretty certain that they do not change their quarters at night-fall, as when encamped near any of their chosen day-haunts I have heard their harsh familiar call at intervals throughout the midnight hours; but of course in the less common case, when they affect bare-shored lakes or rivers by day—and some few *do* do this—they must needs go elsewhere to feed during the night, and in such situations I have once or twice seen them at midday snoozing at the water's edge.

"Their quack or note is peculiar, though something like that of the Pochard, a harsh *kirr*, *kere*, *kirr*, with which one soon gets acquainted as they invariably utter it, '*staccato*,' as they bustle up from the rushes, often within a few yards of the boat."

The Western White-eyed Pochard not only breeds in Kashmir, but it is believed to nest also in Sind, where a few birds of this species appear to remain during the year.

In Kashmir they breed most abundantly, principally in June, and their eggs become an object of commerce in the bazaars. They build a moderate-sized nest of rush and sedge amongst reeds and water-weeds, sometimes on the firm ground, and sometimes on some partially-floating mass of weeds.

In Poland, according to Dr. Taczanowski, the nest is placed amongst the herbage on the very edge of even deep water, generally on a tussock, and sometimes in a bush two or three feet above the ground, always, however, carefully concealed. If any one approaches the nest, the female slips off noiselessly into the water and avoids observation by diving.

The late Lord Lilford obtained a nest with nine eggs in Spain; the nest was at a short distance from the water, amongst high rushes, and was composed of dead dry water-plants, flags, etc., and lined with thick brownish white down and a few white feathers.

The number of eggs laid is frequently as many as ten. They are almost perfectly elliptical in shape, smooth and with very little gloss. In colour they vary between creamy white and pale buff. They measure from 1·9 to 2·2 in length, and from 1·4 to 1·55 in breadth.

The adult male has the head, the greater part of the neck, the sides of the mantle and the whole breast deep chestnut. There is a well-defined, triangular white spot on the chin. A broad collar round the lower neck, a band down the middle of the mantle, and the upper back are blackish brown, the feathers with a rufous margin. The lower back and the scapulars are black, minutely, but indistinctly, speckled with rufous. The rump and the upper tail-coverts are deep black; the tail brown. All the upper wing-coverts are dark brown. The primaries are broadly tipped with black; the first three have the whole outer web blackish brown, the inner web almost entirely white; the next two are white with a black margin to the outer web; the next five are white throughout, with the exception of the tip. The outer secondaries are white, with broad, well-defined black tips; and the inner secondaries are black with a metallic gloss. The upper portion of the abdomen is white; the lower, dull reddish brown vermiculated with grey. The sides of the body are dull chestnut. The axillaries and the under tail-coverts are white, the former mottled with brown at the tip.

The adult female has the head and neck reddish brown. There is a white spot on the chin and the throat and foreneck are mottled with white. The feathers of the mantle, breast, lower abdomen and sides of the body are dark brown with a rufous margin. The upper abdomen is dull white with the brown bases of the feathers showing through and causing a mottled appearance. The under tail-coverts and the greater part of the under wing-coverts are white. The back, scapulars and wing coverts are blackish brown, each feather with a narrow but paler margin. The rump and the upper tail-coverts are plain black ; the tail, brown. The axillaries and the quills of the wing resemble those of the male, but the white portions of the primaries are often tinged with grey.

Ducklings of both sexes change from down into a first plumage which closely resembles that of the adult female.

A specimen collected by Stoliczka in Kashmir on the 1st August, 1873, appears to me to be an adult male in the post-nuptial plumage. It closely resembles the adult female, but the whole chin and throat are white mottled with chestnut, and the sides of the head are streaked with chestnut. The feathers of the abdomen are brown fringed with dull white. There are a few new feathers on the breast, rich chestnut tipped with white.

Male : length about 16½ ; wing about 7 ; tail about 2½. Female : length about 16 ; wing nearly 7 ; tail about 2¼. The bill is bluish black ; the irides, white or greyish white ; the legs and feet, lead-colour, with the webs dusky or blackish. In young birds the irides are said to be brownish. Weight up to rather more than 1½ lb.

118. THE EASTERN WHITE-EYED POCHARD.

Nyroca baeri, (RADDE).

Outer primaries with the outer web much darker than the inner; inner primaries with both webs white, like the speculum; all tipped dusky.

Axillaries white, mottled with brown at the tip.

Bill dark, with no trace of red; of about equal width throughout.

Under tail-coverts pure white.

Head and neck black.

MALE :—Head and neck rich glossy black.

FEMALE :—Head and neck plain black; a chestnut patch on either side of the base of the upper mandible.

VERNACULAR NAMES :—None known.

AS remarked when treating of the last species, it is impossible to say what the range of the Eastern White-eyed Pochard in India may be, but I shall assume the western limit of its migration to be the longitude of Calcutta. There can be little doubt that this species is the White-eyed Pochard of Upper Burma, but I have never had the opportunity offered me of examining the Pochard which is so abundant near Mandalay. I may, however, state that when Veterinary Captain G. H. Evans came to the Natural History Museum some little time ago, I happened to have specimens of all the Indian Ducks exposed to view on tables, and he immediately picked out the Eastern White-eyed Pochard as the species he had met with near Myingyan.

Although there is a specimen of this Pochard in the Indian Museum, at Calcutta, dating back to 1842, it was not until quite recently that Mr. F. Finn drew attention to the two allied species and separated them. He appears to have procured many specimens of the Eastern species between November 25th and January 5th in the Calcutta market, and he remarks that for a short time after their first appearance they are as common as their Western relative. He also noticed the Eastern species in the Calcutta market in February.

The present species is only a winter visitor to the eastern part of the Empire. It is probably this Pochard which Mr. Inglis procured in Çachar. It is doubtless also the species of which Mr. Hume remarks :—"Rather scarce in Manipur. I saw it however at two jheels, besides the Logtak, where it was often seen without its being at all in force." Mr. Hume apparently did not shoot any of these birds in Manipur, for there are no specimens from that country in the Hume Collection, and he appears to have assumed that the Manipur birds were of the common Indian species.

Captain F. T. Williams informs me that a Pochard of this type is found on the Chindwin river. Captain T. S. Johnson found a White-eyed Pochard common near Mandalay, and Major G. Rippon writes to me that he is aware of the difference between the two White-eyed Pochards, and that to the best of his belief he has obtained the Eastern species at Shwebo, Minhla, Sagain and Meiktila in Upper Burma, and at Fort Stedman in the Southern Shan States.

This Eastern White-eye is found in summer in Kamtschatka and Eastern Siberia. In winter it migrates to Japan and China, and it will probably be found to be a common bird at that season throughout the Indo-Burmese countries, Upper Burma and the Shan States.

I can find nothing of any interest regarding this Duck in the writings of authors who have treated of the birds of Eastern Asia. Its habits however, are not in the least likely to vary in any important particular from those of the Western White-eyed Pochard. Mr. F. Finn has kept some of these Ducks in captivity in Calcutta. He writes:—"As to the habits of this Duck I have little to say. In general appearance it is lighter and less 'dumpy' than its near ally; the head and neck and general shape are less Fuliguline than in that species, and recall a Mallard somewhat. It of course swims and dives excellently, and is a less clumsy walker than the Common White-eye. The male has a curious habit of contracting its neck and jerking it backwards in a curve—no doubt a pairing gesture."

This species resembles the Western White-eyed Pochard in the general pattern of its plumage. The difference lies in the colour of the head and neck. In the male of the Eastern species these parts are of a deep black, beautifully glossed with green and purple; there is the same white spot on the chin.

In the female of the Eastern species,

the head and neck are black, without any gloss, and slightly brownish in parts. The chin-spot is present. There is also a large patch of chestnut on each side of the face, near the base of the upper mandible. The chestnut of the breast is not so bright as in the male, nor so sharply defined from the white abdomen.

A bird of this species, sexed as a male, which died in the Zoological Gardens of London in June, and the skin of which is preserved in the British Museum, appears to be in post-nuptial plumage. It resembles the male in winter plumage in many respects, having the back and scapulars speckled and vermiculated; and the chestnut of the breast of a dark colour and sharply defined from the white of the abdomen, but it has the head of the female and exhibits a large amount of chestnut on the face and at the base of the bill.

Male: length about 18; wing 8¼; tail 2½. Female: length about 17½; wing 8; tail 2½. According to Mr. Finn, the male has the bill dark grey or greyish black with a black nail and a grey patch at the tip; the female has the bill darker, with the grey patch less distinct. The male has white irides, but in one bird of this sex they were pale cloudy greenish yellow; the female has the irides brown, sometimes grey, sometimes a mixture of brown and white. In both sexes, the feet are grey with dark joints; the legs black, The weight has not been recorded.

THE SCAUP DUCKS.

THE Scaup Ducks differ from the Pochards in the pattern of the primaries and in having a much broader bill. The bill is also rather wider near the tip than at the base.

The two Indian species of Scaup Ducks resemble each other rather closely. The Tufted Duck at all ages, however, has a pointed crest, short in females and young birds, long in the adult males. In the bill of this species the tip is black as well as the nail. The Scaup has no sign of a crest, and only the nail of the bill is black.

It is well to mention that in the Scaup Duck the speculum is always much wider than in the Tufted Duck, and the black of the breast reaches down much further. These characters, however, are comparative and not of much practical value, unless specimens of the two species are laid side by side.

Adult males of the two species differ conspicuously in the colour of the upper plumage, one having the back and scapulars distinctly vermiculated with grey, and the other having these same parts merely speckled with white. Adult females are easily separated by the amount of pale coloration on or round the base of the bill. In certain stages of the young plumage, the only reliable character by which to separate the two species is the absence or presence of a crest and possibly also the colour of the tip of the upper mandible.

On the general subject of these and other diving Ducks, I do not think I can do better than quote Sir Ralph Payne-Gallwey. He says :—" The diving Ducks, as before stated, seek their food at the bottom, differing in this respect from the surface feeders. Their legs are placed farther back, and near the tail; their down and feathers are thicker and more impervious to water, a circumstance, indeed, necessitated by their habit of feeding. Their bodies are rounder, their wings shorter, and their flight very irregular, compared with that of Geese or surface-feeding Ducks. Their pinions beat faster, and show that more exertion is required to sustain and project their heavier bodies.

They do not take long flights, neither are they to be seen, like the former, against the sky. Their flight is hurried and anxious; they never wheel about with the grace and uncertainty of Teal; but fly straight, and with all haste, to places they appear to have previously chosen."

119. THE SCAUP DUCK.

Fuligula marila, (LINNÆUS).

Outer primaries with the outer web much darker than the inner; inner primaries with the outer web white, or much paler than the inner.

Axillaries white, or white mottled with brown at the tip.

Head not crested.

Bill uniform bluish, with only the nail black.

MALE:—Head, glossy black; back and scapulars regularly and distinctly vermiculated with black and grey.

FEMALE:—Head, reddish brown; with a band of white or pale rufous, quite half an inch broad, encircling the base of the bill.

VERNACULAR NAMES:—None known.

THE Scaup Duck is probably a rare winter visitor, and there are but few records of its occurrence in India.

Mr. Hume mentions having two specimens of this Duck in his collection, from Kashmir, but neither is now in the Hume Collection. Mr. A. G. Young informed

Mr. Hume that he had shot this species in Kulu. Hodgson is said to have procured this Duck in Nepal, but there are no specimens in his collection, now in the British Museum, and his drawing of *Fuligula nyroca* appears to me to represent the Eastern White-eyed Duck and not a Scaup Duck as suggested by Mr. Hume. Colonel McMaster was of opinion that he observed the Scaup Duck in the Northern Circars, but he does not appear to have obtained a specimen.

Turning to more recent times, we find that Mr. R. N. Stoker shot no less than six specimens of the Scaup Duck in the Punjab, in the months of November, December, January and March. Five of these birds were shot in the Indus river, near Attock ; the sixth, in the Jubbee river, near Hasan Abdal. Mr. W. N. Chill obtained an adult female, in March, near Delhi, and Mr. J. D. Inverarity informs us, in the pages of the Bombay Natural History Society's Journal, that he observed this species at Panwell, near Bombay. It has also been recorded from Karachi by Mr. Murray. It is very probable that this Duck has been overlooked, and that it is less rare than is commonly supposed.

The Scaup Duck has an extremely wide range. It inhabits North America, Europe, Northern Africa, and the greater portion of Northern and Central Asia, being found in summer up to the 70th degree of north latitude, and migrating south in winter. The Chinese race (*F. mariloides*) is thought to be a smaller and separable race by some authors, but it does not appear to me to be distinct.

The Scaup is essentially a maritime bird, except at the breeding season, when it withdraws some distance inland. Some Scaup Ducks, however, may occasionally be found on fresh water at all seasons of the year, but the majority must be looked for on the sea-coast.

The Scaup has hitherto been so rarely observed in India, that I cannot find a single remark about its habits there, and I must consequently glean an account of its mode of life from English writers. Seebohm observed this Duck in Northern Europe and also in Asia. He writes:—"The Scaup is most active when the sun shines from the north; that seems to be its favourite feeding-time; and then its loud harsh scream may be heard, as the drake calls to his mate to leave her eggs covered warmly up in a blanket of down, and to come away from her snug nest among the bilberries on the adjacent bank-side and join him on the lake, or perhaps have a swing down the river to the delta to pick up anything that may be left on the strand at low tide. Of all the cries of the Ducks that have come under my notice, I think that of the Scaup is the most discordant. None of them are very musical, perhaps; but if you imagine a man with an exceptionally harsh, hoarse voice screaming out the word *scaup* at the top of his voice, some idea of the note of this Duck may be formed. It is said that when this harsh note is uttered, the opening of the bill is accompanied with a peculiar toss of the head. The ordinary alarm-note during flight is a grating sound like that made by the Tufted Duck.

"The Scaup is a very gregarious and sociable bird. In winter it is almost always seen in flocks, frequently associated with other Ducks, and in summer small parties are constantly seen coming to and going from their feeding-grounds. When alarmed they generally seek safety by diving, but if they find themselves obliged to take wing they get up from the water, one after another, with a great splash; but once fairly launched in the air, they seem to get away very quickly, though their wings are obliged to vibrate at a great speed and with considerable noise. They both swim and dive with perfect ease, and obtain much of their food under water.

"Although the Scaup, when cooked, is said to taste very fishy, it does not appear to be much of a fish-eater. Shell-fish are its favourite food, but it varies this diet with crustaceans, the larvæ of various insects, and with some vegetable matter. In confinement, Montagu found it remarkably tame, feeding eagerly at once on soaked bread, and after a few days on barley."

Mr. Cordeaux remarks:—"These Ducks appear to keep in pairs, male and female, throughout the winter, as we invariably find them in mixed flocks composed of about equal numbers of males and females. The Scaup swims high in the water. They are very expert divers, remaining immersed even longer than the Golden-eye; and I have frequently known them to continue underneath from fifty to sixty seconds. In the evening, at dusk, and on moonlight nights, Scaups leave the water and fly up on the flats to feed; they are then often killed by our gunners who are lying in wait on the muds for Wigeon and Mallard."

Sir Ralph Payne-Gallwey, in "The Fowler in Ireland," writes :—"When met with in twos and threes, Scaup are very tame, but if many are together they are wild and difficult of approach. By reason of their dark appearance on the water, and the large bulk of body exposed, no fowl show thicker at a distance, or scatter more when neared. They are most unsatisfactory birds to follow in every way. Their edible quality is far from good, and a successful shot is very seldom made at them."

Scaup Ducks appear, however, to be very often tame and easily approached. Mr. Abel Chapman has observed these birds closely, and I shall quote his interesting remarks. He tells us, in his "Bird-Life of the Borders," that—"the feeding-grounds of the Scaup are over rocks where sea-weed grows luxuriantly, and where they dive among the long, waving tangles in search of the various shell-fish and their spawn and the host of minute forms of marine life which abound in such places. Owing to this preference, their company is often confined all through the winter to certain localities—usually about the harbour entrance, or a rocky bay adjoining the open sea—hence they are less frequently met with than the Golden-eyes, which are scattered in odd pairs all over the sandy channels of the estuary. . . .

"Besides the places where, as above indicated, the main bodies of the resident Scaup Ducks take up their winter quarters, one frequently meets with small bunches of half a dozen or so inside harbour, especially about the "scaps," or mussel-beds (whence probably their name), and even on the edge of the ooze, where they occasionally vary their shell-fish diet with a feed of sea-grass. They always, however, keep afloat, or nearly so; it is very seldom one sees a Scaup or Golden-eye go on to dry land, nor (on the coast) have I ever heard either species utter any note.

"Scaup are the tamest of all the Duck tribe, and—exactly the reverse of the Golden-eye—they continue throughout the winter as tame and as easily approached as when they first arrive in October. On seeing a pack of them, one can shove the punt close in upon them, and then, if scattered, can wait securely till they arrange themselves nicely to receive the charge. Scaup are also among the toughest of birds and the most tenacious of life. At least half the cripples usually escape, and any that are captured alive it is all but impossible to kill. I have seen, when the bag was emptied on to the kitchen floor, a couple of Scaups, which had appeared as dead as door-nails, return to life and flutter vigorously round the room. Even when killed, however, they are of no value, being the strongest, nastiest, and most utterly uneatable Ducks I ever tried."

Regarding the nesting of the Scaup Duck, I must again quote from Seebohm's charming work. He writes:—"The Scaup generally selects some sloping bank, not far from water, but high enough from the edge to be secure from floods, on which to build her nest. It is always well concealed, and seldom to be found except by accidentally frightening off the sitting Duck. Sometimes it is placed under the cover of a willow or a juniper bush, but more often in the open, carefully hidden in some hole in the rough ground, surrounded by cranberries or bilberries struggling amidst tufts of sedge or cotton-grass. The hole is lined with dry broken sedge, and as the eggs are laid an accumulation of down is formed sufficient to keep them warm when the Duck leaves them to feed."

The Scaup lays from six to nine eggs. They are very similar in every way to the eggs of the Pochard, and measure from 2·4 to 2·7 in length and from 1·65 to 1·75 in breadth. The down is dark brown with pale or greyish white centres. The Scaup breeds in June and July.

The adult male has the whole head, neck, mantle and breast black, glossed with green and purple, according to the light in which the bird is held. The upper part of the abdomen is white; the lower part white, mottled and vermiculated with brown. The under tail-coverts are black. The sides of the body are white, very faintly vermiculated with grey. The axillaries are white; the under wing-coverts, a mixture of brown and white. The scapulars are pale grey vermiculated with black; the lower, concealed feathers, plain black. The back and the upper wing-coverts are dark brown vermiculated with white; the larger wing-coverts almost plain brown. The outer primaries have the inner web drab with a blackish tip, the outer web blackish. The inner primaries have the inner web drab, the outer white or very pale grey, both webs tipped with blackish. The outer secondaries are pure white with broad, black tips; the inner, brown; the innermost, speckled with white. The rump and the upper tail-coverts are black; the tail dark ashy.

The adult female has a very broad white, or pale rufous, band completely encircling the bill, and a pale patch on the ear-coverts. The head, neck, mantle and breast are reddish brown, with the edges of the feathers more or less paler, and the feathers of the breast distinctly margined with white. The upper part of the abdomen is white; the lower part, and the under tail-coverts brown, mottled and vermiculated with greyish white. The axillaries are white and also a great part of the under wing-coverts. The sides of the body are rich brown, mottled and barred with greyish white. The back and the scapulars are dark brown, very irregularly and sparingly speckled and vermiculated with grey. The upper wing-coverts are plain brown. The quills of the wing, both primaries and secondaries, resemble those of the adult male, but the innermost secondaries are not speckled with white.

The male, in post-nuptial plumage, is

said to resemble the female, but may be separated by the head and neck being darker, or blackish brown.

The young ducklings of both sexes change from down into a plumage which resembles closely that of the adult female, but the white parts round the base of the bill are suffused with brown. Young males may be found during the winter in all states of plumage intermediate between that of the male and that of the female. The early assumption of black feathers on the head, and of black and white vermiculations on the scapulars, serve to indicate the young male.

Male: length about 20; wing nearly 9; tail 2½. Female: length about 18; wing 8; tail 2¼. In both sexes the bill is greyish blue or lead-colour; the irides yellow; the legs and feet greyish blue or leaden-grey. I cannot find any record of the weight of this Duck.

20. THE TUFTED SCAUP DUCK.

Fuligula fuligula, (LINNÆUS).

Outer primaries with the outer web much darker than the inner; inner primaries with the outer web white, or much paler than the inner.

Axillaries white, or white mottled with brown at the tips.

With a pointed crest of narrow feathers, varying from one to two and a half inches in length.

Tip of the upper mandible, as well as the nail, black.

MALE:—Head glossy black; sides of the body white.

FEMALE:—Head brown, with a whitish patch on either side of the base of the upper mandible, and with indications of similar patches on the forehead and chin; sides of the body brown.

VERNACULAR NAMES:—*Dubaru*, *Ablac*, *Rahwara*, Hind.; *Turando*, Sind; *Malac*, Nepal Terai; *Nella chilluwa*, Telugu; *Neer-bathoo*, Tamil; *Neer-Kolee*, Canarese.

THE Tufted Scaup Duck is found as a

winter visitor, in greater or less abundance, over the peninsula of India from Sind to Bengal, and from the Himalayas down to about the 11th degree of north latitude. It must undoubtedly occur in Assam and the country to the south, but we have no definite information on this point till we come to Manipur, where Mr. Hume observed it to be very abundant not only on the Logtak lake but elsewhere. It may, I think, without doubt be said to be common over almost every part of Upper Burma. It is so abundant near Mandalay that in the large bag of Ducks and Geese made by Capt. T. S. Johnson and his party, and to which I have so often made reference, there were 122 Tufted Ducks out of a total of 562 birds. Major G. Rippon informs me that this Duck is found all over the Southern Shan States. I did not meet with it in any part of Lower Burma.

The Tufted Duck occurs over the whole of Europe and Asia, being found in summer up to about the 70th degree of north latitude. In winter it occurs over a considerable portion of Northern Africa, and Southern Asia, from the Red Sea to China. It occurs as far south as the Philippines and Borneo, and has even been observed in some of the islands of the Western Pacific Ocean.

The Tufted Scaup Duck arrives in India as early as the middle of October, but they are not generally distributed till the beginning or middle of November. Most of the birds leave again by the end of March, but a few linger till nearly the middle of April. Dr. Jerdon once shot a specimen of this Duck in the Deccan in June, but there is no reason to think that the Tufted Duck ever remains to breed in India, even in Kashmir.

The Tufted Duck is more of a fresh-water Duck than the Scaup, being found on the sea-coast in winter only, and at other times inland on lakes and ponds. They occur in very large numbers in many parts of the Empire. Mr. Hume says:—"At the Manchar lake, I saw two enormous flocks. I have repeatedly seen similar flocks in old times at the Najjafgarh and other vast jhils in the Punjab, the North-west Provinces and Oudh; and I should guess that at the Kunkrowli lake in Oodeypore there must have been nearly ten thousand, covering the whole centre of the lake."

This species is seldom seen on rivers. Its usual haunts are pieces of open water with plenty of submerged weeds and surrounded by reeds. These Ducks feed by day, constantly diving in search of shells and all the minute forms of animal life found in water; they also bring up branches and roots of weeds and eat them, on the surface, at leisure. They generally keep in the centre of ponds as far from the banks as possible, and when pursued they prefer very often to dive rather than to fly away. Their powers of diving are unrivalled, as may be judged from the following incident, narrated by Mr. Stevenson:—"They are very expert divers, and the late Mr. Thomas Edwards states that, having occasion to remove some pinioned birds from a pond at Thickthorn, he had the greatest difficulty in capturing them by means of nets, with which he succeeded in surrounding them. One Tufted Duck he could see in the clear water dive and swim round and round to find an opening to avoid the net, and attempt to go down into the mud at the bottom of the lake, and grub its way under the net like a rat. This was done some eight or ten times by the same bird, and the time it remained under water was quite extraordinary."

Of the general habits of this Duck

Mr. Hume remarks :—"This species has, I think, an easier, smoother, and more rapid flight than most of the other Pochards, and rises much more rapidly and with less fluster than these; but still, like these, it strikes the water once or twice with its feet, and makes a loud splashing sound when rising in numbers. It swims rather deep in the water and very rapidly, and dives constantly, keeping under water for a surprising time. When you try to get near them in any slow native boat, the fresh fowl seldom think of rising, but swim and dive away from you quite as quickly as the boat can go. Even when a gun is fired they do not always fly; indeed I have seen a large flock of several hundred birds disappear as if by magic—all having dived as if by one consent. . . . At other times they will rise before you are within a hundred yards, and taking short flights, plump down again suddenly into the water, stern first, as if shot. . . . Though noisy enough as they splash up in a crowd out of the water, and recognisable at any time by the sharp whistling of their wings as they pass overhead, they are, in winter at any rate, singularly silent birds when let alone. When alarmed and flushed, they occasionally emit the regular grating Pochard call, ***kurr***, ***kurr***, but not so loudly, I think, as some of the other species.

"On land I have never once seen them, but I should expect them to be clumsy walkers like most of the other Pochards."

The drakes of this species, when swimming, often appear to have the greater part of the wing white, whereas there is in reality no white on the closed wing except the small speculum. This effect is due to the wing being nestled in, and partially hidden by, the long and loose white feathers of the sides of the body. Sometimes the bird shakes its wings and readjusts them outside these white feathers, and then the wings appear, as they really are, black. This procedure can be easily watched with birds of this species in captivity. These Ducks do not appear to have the power to raise their crest.

Of the breeding of the Tufted Scaup Duck, Seebohm writes:—"The nest is sometimes placed under a bush by the side of a pond, sometimes amongst the rushes, and often in the centre of the tufts, tussocks or hassocks of sedge, which grow to a height of two or three feet above the water. It is a mere hollow, lined with dry sedge or grass, and after the full complement of eggs is laid, and the duck has begun to sit, with down. The number of eggs is usually ten or twelve, but sometimes only eight are laid, and occasionally as many as thirteen."

The eggs of this species resemble those of the Pochard and Scaup, but are rather smaller. They measure from 2·15 to 2·4 in length and from 1·55 to 1·65 in breadth.

The adult male has the whole head, the crest, and the upper part of the neck deep black, with a green or purple gloss, according to the light in which the bird is viewed. The lower part of the body, the mantle, and the upper part of the breast are black, with a smaller amount of gloss; the feathers of the breast margined with white. The lower part of the breast, the abdomen, the sides of the body, the axillaries and the greater part of the under wing-coverts are white; the extreme lower portion of the abdomen, the thighs, and the under tail-coverts, black. The back and the scapulars are black, very minutely speckled with white. The upper wing-coverts are plain brown. The rump and the upper tail-coverts are deep black; the tail, dark brown. The outer primaries have the inner web drab with a blackish tip; the outer web blackish. The inner primaries have the inner web drab, the outer white or very pale grey, both webs tipped with blackish. The outer secondaries are pure white, with broad black tips; the inner, black; the innermost, very slightly speckled with white.

The adult female has the whole head, crest and neck, the entire upper plumage and the tail dark brown, almost black in parts, the feathers of the back and scapulars with broad rufous margins, very conspicuous just after the autumn moult, but becoming narrower, or altogether disappearing, as the winter passes. On either side of the base of the upper mandible there is a white patch, streaked with brown. The feathers on the forehead and chin have light-coloured bases, which form more or less distinct patches on those parts. The chest is brown with paler margins. The breast is dull white, much mottled with brown, and gradually passing into the purer white of the upper part of the abdomen. The lower part of the abdomen, the thighs, and the under tail-coverts are brown, each feather with a pale margin. The feathers on the sides of the body are rich hair-brown, margined with pale rufous. The wings are precisely similar to those of the male, except that the dark parts are not of such a deep black.

Of the post-nuptial plumage of the male, Mr. Dresser writes :—" The summer plumage of the male, which, as in other Ducks, is retained for a very short time, differs from the winter dress in being browner on the head and neck ; the back and lower neck are as if powdered with greyish white, but this powdering is indistinct ; the nuchal tuft is much shorter than in the winter."

Ducklings in down, of both sexes, change into a first plumage which resembles that of the adult female, but is of a paler brown. Young males soon begin to assume some of the black feathers of the adult male, especially on the head ; and the pale patches at the base of the upper mandible completely disappear before the head is entirely black.

Male : length about 17 ; wing 8 ; tail 2½. Female : length about 15½ ; wing 7½ ; tail 2. The bill is bluish, with the tip black ; the irides yellow ; the legs and feet vary from leaden to light greyish blue, with the webs black. In young birds, the irides appear to be brownish white. Weight up to a little more than 2 lb.

THE GOLDEN-EYES.

THE Golden-eye is the sole Indian representative of a very pretty group of Diving Ducks which is found distributed over a great part of the northern hemisphere. The plumage of these birds is black and white or brown and white.

In the Golden-eyes, the bill is very short and gradually tapers towards the tip. The legs are short and the feet large, as is the case with all the Diving Ducks. The head is not distinctly crested, but the feathers of the crown and of the hind-neck are considerably lengthened. The sexes are differently coloured, but preserve the same pattern of plumage. The dark axillaries and the white speculum should render these birds easy of identification at all ages.

121. THE GOLDEN-EYE.

Clangula clangula, (LINNÆUS).*

Outer web of the primaries blackish; inner web drab, with a blackish tip.

Axillaries uniformly blackish or brown.

The middle secondaries entirely white.

Head and upper neck dark, sharply defined from the white of the lower neck.

MALE :—**Head black, with a white patch on each cheek.**

FEMALE :—**Head chocolate-brown; no white patch on the cheeks.**

VERNACULAR NAMES :—*Burgee*, Punjab.

THE Golden-eye has been met with in India on so very few occasions that it may justly be looked upon as a very rare visitor. It has only been observed hitherto in Sind, the Punjab and the North-west Provinces, but I have good reason to think that it will be obtained in Upper Burma.

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* *Clangula glaucion* of the British Museum Catalogue.

The first Indian-killed specimen of this species appears to have been got by Sir A. Burnes on the Indus river. Subsequently, Colonel Yerbury shot another specimen on the same river. This bird is preserved in the British Museum. Mr. R. N. Stoker observed this species, and shot several specimens, at Ghazi and Hasanpur, on the Indus above Attock, in December, and he has given full particulars regarding these birds in "Stray Feathers," vol. x., pp. 424 and 515.

The Golden-eye has occurred once only in the North-west Provinces, where Dr. Bonavia obtained a drake which had been captured by fowlers near Lucknow.

When travelling on the upper reaches of the Irrawaddy river between Sinbo and Myitkyina, I frequently observed small flocks of Ducks which I am strongly of opinion were Golden-eyes. I was, however, always in a noisy paddle-steamer, and these Ducks would never allow it to approach nearer than 300 or 400 yards, and under these circumstances it is impossible to be quite certain of the species. I hope that sportsmen at Myitkyina, who may have facilities for travelling about in canoes, will be more fortunate than myself, and settle the question of whether the Golden-eye occurs in the upper Irrawaddy or not.

The Golden-eye is one of those Ducks which has a very wide distribution, being found over the greater part of the northern hemisphere. In summer it occurs up to, and within, the Arctic Circle, and in winter it ranges down the American continent to Mexico; to Southern Europe and Northern Africa; and to many parts of Southern Asia.

There is nothing on record regarding the habits of the Golden-eye in the East, and I shall therefore give my readers a number of interesting notes extracted from the writings of European authors.

Sir Ralph Payne-Gallwey remarks:—"The Golden-eye, like the Pochard, frequents inland lakes in some numbers, but is always a wary bird and difficult of approach. The wings of this species are so short and stiff in proportion to its weight and size, and are forced to beat so quickly to project its body, that a distinct whistle may be heard as it flies by. . . . To get within shot of a number of Golden-eyes is an unusual feat in open water. The man, or men, and punt that can do this need not fear failure with other fowl. Scaup or Pochard that may have been under water at the moment of firing, after finishing their dive for food at leisure, will startle the fowler by rising close to him as he pushes up to gather his cripples. Golden-eyes seem to know when their companions are leaving the surface in fright, and will at once spring up and follow to join the rest. I never knew them incautiously rise within range after a shot, like the other species alluded to."

The author of the "Birds of Somersetshire," Mr. Cecil Smith, has some excellent remarks on the way the Golden-eye often escapes after being wounded. He says:—"The Golden-eye is a very expert swimmer and diver, so much so, that, like many others of this family, it is often a work of considerable difficulty to recover a winged bird if it falls into the water. . . . In inland waters where there are rushes and weeds these birds—and even the Wild Duck, which is not nearly so much of a diver—dive into some weedy part, where they lie perfectly concealed, allowing nothing but a very small portion of the bill, just enough to admit air, to appear above water: if there are no weeds I have known them conceal themselves in the same way under cover of any overhanging grass or unevenness of the bank; and so quietly do they rise for the purpose, putting their bills above water, that even in a still quiet pond hardly any circles are made on the water by this operation to attract attention. In the open sea, perhaps, it is more difficult for them to escape in this way, especially on a calm day; but still I am sure they do so occasionally, making use of any little bit of floating sea-weed to conceal themselves, or even without any such help, if they make a good long dive, they may still escape, so small an object as the bill of a bird being difficult to distinguish at any considerable distance, especially if the bird happens to get just in the glare of the sun upon the water: of course in rough weather the difficulty in seeing the bill of the bird is considerably increased. In no other way can I account for their sudden disappearance; just when I have almost been in the act of putting out my hand to take a wounded bird into the boat there is a splash and a dive, and sometimes the bird is never seen again: it certainly does not die under water, or it would rise to the surface and be easily seen."

Mr. John Cordeaux observes in his

"Birds of the Humber District":—"These Ducks swim rather high in the water. They are expert divers. A fine old male, which I watched for nearly an hour on the 26th January, 1869, swimming and diving in our creek, remained immersed, on the average, from forty-five to fifty seconds, continuing on the surface between each dive about twelve seconds, consequently spending four-fifths of its time under water."

Mr. Abel Chapman thus writes about Golden-eyes in his work on Bird-Life of the Borders:—"These, on first arrival, are quite tame and easily approached in a punt, before which they continue stupidly swimming away even when within fair shot. But a few weeks later, as soon as they have acquired experience of the dangers of the coast, Golden-eyes are among the wildest of all wild fowl; indeed, with the Mergansers they are perhaps the only birds which, on open water, it is wholly useless to try to approach in a gunning punt. Golden-eyes, when on the coast, spend the night at sea, flying up in twos and threes into the estuaries at the dawn; and their haunts are the deep-water channels of the harbour, especially those with sandy or shingly bottoms, where they continue diving ceaselessly all day long. Their food consists of shrimps, small shell-fish and marine insects, besides, to a lesser degree, the sea-grass and other vegetable matter. This latter they often carry up from the bottom and eat at their leisure on the surface. I would not have thought them sufficiently agile to catch any of the true fishes, but one day last winter (Dec. 5th), while watching a Golden-eye busily diving among the ice on a small (inland) pool, I was surprised to see it catch several fish. Every third or fourth dive, it brought up a small silvery fish—sticklebacks probably—which it spent some time tugging at and chewing on the surface before finally swallowing."

Seebohm has the following general remarks on the habits of this species:—"The Golden-eye chooses for its breeding-grounds a combination of forest, lake, river and marsh, and when the ice drives it southwards it prefers a similar locality; but if such be not easily found it whiles away the winter months on the sea-coast. It is remarkable for its noisy flight, its rapidly moved wings whistling in the wind as it passes overhead. It makes also a great splashing in the water when it rises, but does not readily take wing, as it is a most expert swimmer and diver. It is one of the shyest of Ducks, and very difficult to shoot. It makes the same grating sound when calling to its fellows during flight as the Scaup and the Tufted Duck. It is a clumsy walker on the land, and lives almost entirely on the water, feeding on nearly every kind of both animal and vegetable food that its unrivalled powers of diving enable it to find at the bottom: small fish, young frogs, shell-fish, insects, the seeds and buds or tender leaves of water-plants, nothing comes amiss to it.

"But the most remarkable fact in the history of the Golden-eye is its habit of occasionally perching on the bare branch of some forest tree, and of discovering a hole in the trunk, sometimes quite a small one, but leading to a hollow inside, where it deposits its eggs on the rotten chips of wood without any nest, like a woodpecker. These breeding-places are sometimes a considerable distance from the ground. In the valley of the Petchora I have seen one at least five-and-twenty feet from the ground; but one I saw in the valley of the Yenesay was not more than half as high. It has been seen to convey its young one by one down to the water pressed between its bill and its breast. In many places the natives take advantage of this choice of a nesting-site and put up boxes with small entrance-holes in the side. It is glad enough to avail itself of these convenient situations, but generally pays the penalty of its trustfulness by having its eggs robbed by the hard-hearted peasants. To rob a nest for the sake of a museum that may give pleasure to hundreds of students for scores of years is one thing, but to do so for sport or food is another. Where a hollow tree-trunk cannot be found a hollow branch is often selected, and in some parts of Germany, where the forests are too well farmed to admit of the existence of hollow trees, the Golden-eye, according to Naumann, breeds on the top of pollard willows or even amongst the reeds on the ground."

Referring to the nesting-boxes which the peasants of Northern Europe hang up for these Ducks to nest in, Mr. Dresser remarks:—"These are frequently hung up close to the peasants' huts; and even then the Golden-eye will nest in them. The bottom of the hollow tree or nest-box is neatly lined by the old bird with down, and on this soft bed the eggs, which vary in number from ten or twelve to seventeen or even nineteen, are deposited. When hatched the young birds are carried by the female in her beak down to the ground or to the water, one after another being taken down until the entire brood is taken in safety from the elevated nesting-place."

The British Museum contains a considerable series of the eggs of this species. The eggs are oval or sometimes elliptical, with a smooth surface and a fair amount of gloss. In colour they are a greyish green of different shades, and they measure from 2·1 to 2·4 in length by 1·55 to 1·75 in breadth.

The down is pale lavender-grey with paler centres.

The adult male has the head and upper neck black, glossed with green and purple. There is a large white patch on each cheek. The lower neck, the upper part of the mantle, the sides of the breast, the breast itself and the lower plumage are white; the parts near the thighs being more or less brown, and the long feathers of the flanks margined with black on the inner web. The lower part of the mantle, the back, the rump and the upper tail-coverts are black. The inner scapulars are black ; the outer white, with the outer webs partially margined with black. The upper wing-coverts, round the edge of the wing, are black. The remaining coverts are white, the lower series with concealed black bases. The inner webs of the primaries are drab with black tips; the outer webs entirely blackish. The first few outer secondaries are black, with some white on their inner webs. The others are white. The long, pointed, inner secondaries are black. The tail is dark brown, tipped paler. The under wing-coverts and the axillaries are uniformly blackish.

In post-nuptial plumage, the drake resembles the duck, but retains the pure white upper wing-coverts of the winter plumage.

The adult female has the head and upper neck chocolate-brown, followed by an imperfect white collar. The upper part of the mantle, the chest and the sides of the breast are dark slaty grey, each feather with a whitish margin. The back and the upper part of the rump are blackish brown, the feathers with grey margins. The lower part of the rump and the upper tail-coverts are plain blackish brown. The tail is ashy brown. The breast and the lower plumage are white, the part about the thighs being brown. The feathers on the sides of the body are ashy brown, tipped with white. The axillaries and the under wing-coverts are uniformly brown. The scapulars are blackish brown, tipped paler, and mixed with some white externally. The upper wing-coverts are dark brown, more or less edged and mottled with white; the lower series have brown tips and concealed black bases. The primaries and the secondaries resemble those of the male bird.

Young ducklings of both sexes change from the down into a plumage which closely resembles the plumage of the adult female. During the winter and early spring young males may be found in every stage of intermediate plumage between that of the adult male and that of the adult female.

Male: length about 18; wing 9; tail 4. Female: length about 16; wing rather more than 8; tail 3¼. In the male the bill is black; in the female brown, with some yellow towards the tip; the irides are yellow; the legs and feet vary from yellow to orange-yellow, with the webs blackish. In some females and young males there is a yellow bar across the middle of the bill. Weight up to about 1¾ lb.

Closely allied to the Golden-eyes are the Scoters. They are marine Ducks, but they sometimes also occur inland. No Scoter has yet been known to visit India, but in the course of time a straggler may be picked up within our limits. I shall indicate the species which occur in Asia.

All the Scoters resemble the Golden-eyes in the pattern of the primaries, the inner webs being drab, with a dark tip; the outer webs, entirely dark brown. The axillaries are black or brown. The plumage of the males is black, that of the females brown, and it is varied in some species by the presence of a small amount of white on the head and wings.

THE COMMON SCOTER (*Œdemia nigra*).—This species has no white whatever on the plumage; the male being glossy black throughout, and the female brown, paler beneath, and with the throat and the sides of the head grey. The male has a large black knob at the base of the upper mandible, and the space in front, yellow; the female has no knob, but the middle portion of the upper mandible is yellowish, much as in the male. N.-W. Asia.

THE AMERICAN SCOTER (*Œdemia americana*).—Very like the Common Scoter. The male has the knob on the bill yellow, not black. The female appears to be undistinguishable from the female of the Common Scoter. N.-E. Asia.

THE VELVET SCOTER (*Œdemia fusca*).

THE EASTERN SCOTER (*Œdemia carbo*).—These two species are very closely allied, so much so that it is difficult to separate them from mere description. The Velvet Scoter, should it ever occur in India, will probably be found in the north-west part of the Empire. The Eastern Scoter will be found in Burma and the Shan States only. Both species may be recognised at a glance, and separated from the Common and the American Scoter by the white patch on the secondaries. The males of both species also have the lower eyelid white; and the females have two whitish patches on the side of the head. The Velvet Scoter occurs in north-western Asia; the Eastern Scoter in north-eastern Asia, Japan and China.

In this place should also be noticed:—

THE LONG-TAILED DUCK (*Harelda glacialis*).—It occurs throughout a considerable portion of Northern and Central Asia, and has been obtained on the Caspian Sea and in China. It may therefore straggle into India. In the pattern of the primaries and in the colour of the axillaries it resembles the Golden-eye, but no portion of the quills of the wing is white. These characters will suffice to separate the Long-tailed Duck from the Golden-eye and all other Indian Ducks, at all ages. The adult male has a large portion of the plumage white; and the central tail-feathers are greatly lengthened. The female has the plumage of a dull brown colour and the middle tail-feathers are not lengthened.

THE STIFF-TAILED DUCKS.

The Ducks of this group are very widely distributed over the world, but only one species occurs in India.

The tail of all these Ducks is of very remarkable construction, being composed of eighteen very narrow stiff feathers of considerable length. The upper and under tail-coverts are, at the same time, extremely short, so that the tail-feathers become very prominent. The Indian species, in addition to its curious tail, has the base of the upper mandible much enlarged, and the whole bill coloured blue, so that its general appearance is very grotesque.

The character of the plumage is barred, and the two sexes are not very differently coloured. The speculum is of the same colour as the rest of the wing, which is extremely small. The feet are very powerful, the middle toe being quite double the length of the tarsus. The head is not crested. The bill is short and wide, and somewhat broader near the tip than at the base.

As the sexes in this Duck are so much alike, it is improbable that the drake should have a post-nuptial phase of plumage. On the other hand, it is possible that the drake undergoes a partial moult in the spring, as well as a complete moult in the autumn.

122. THE STIFF-TAILED DUCK.

Erismatura leucocephala, (SCOPOLI).

Primaries nearly uniform drab brown, with darker tips.
Axillaries white.
Under tail-coverts cross-barred.
Base of the upper mandible much swollen.
Tail composed of narrow, stiff feathers, projecting fully three inches beyond their coverts.

MALE :—The whole head, except the crown, pure white.

FEMALE :—Only the chin, the throat, and a broad band under the eye white.

VERNACULAR NAMES :—None known.

THE Stiff-tailed Duck has been obtained several times in India, but in places so remote from each other that we may safely predict that it will eventually be observed over the whole of Northern India.

The first Indian-killed specimen was shot by Mr. F. Field. He says of this :—" I shot this bird on the 28th of October at the 'old nullah,' about a mile from the Civil Station of Loodhiana, Punjab. It was sitting alone in a pool. I stalked up close behind some reeds, and then showed myself, expecting to see it fly. All it did was to cock its little stiff, thin pointed tail, and swim off in a quiet way for some ten yards. Its appearance, while swimming with its tail turned upward, was most peculiar. I tried to frighten it into flying, but it would not rise, so I shot it while swimming."

The next recorded specimen was obtained by Mr. W. N. Chill in the Najafgarh jhil near Delhi. A third was also obtained by this gentleman near the same locality on the 28th of October of the same year. He subsequently got two more Ducks of this species near Faruknagger. Mr. Lean of the 5th Bengal Cavalry shot a bird of this species in the Pilibheet District. Mr. T. Bomford was fortunate enough to acquire a specimen of this Duck in February at Multan Keengurh on the bank of the Indus river.

In the British Museum there is a skin of this species which was obtained at Peshawar in March by General Kinloch, and another at Delhi by Lieut. J. H. Grant in January.

Mr. F. Finn procured two specimens of this Duck in the Calcutta market, and he informs us that Capt. E. D. White shot one between Lucknow and Bareilly on the 22nd of January, in heavy moult; also that Capt. H. J. Sherwood. obtained three specimens in December in the Ganges Kadar, 20 miles south of Roorki, and that Lieut. C. R. Bushe met with one bird of this species at Sialkote, Punjab, in February.

The distribution of the Stiff-tailed Duck is very similar to that of the Marbled Duck. It appears to be migratory, but to no great extent. The birds that visit India probably come from Turkestan. It occurs in Spain; on both the southern and northern shores of the Mediterranean, straggling sometimes into Central Europe, and is found through Palestine and South-western Asia as far as Turkestan. It is also said to occur in Southern Siberia.

This Duck does not appear to be common anywhere, and its history can only be arrived at by the joining together of fragmentary notes. Mr. A. B. Brooke, writing of this bird in Sardinia, says:—"They were not numerous, and seemed to go singly or in pairs; and I never saw more than two together, more frequently single birds. I watched a fine old male one day, for a long time, feeding by himself in the middle of a small lake, but always safely out of shot; he was diving strongly and vigorously, dashing himself under the water, where he remained a considerable time. Their peculiar attitude in the water, along with their short, broad, pale-blue bill, gives them a most quaint appearance."

Mr. J. Whitehead observed this Duck in Corsica. He writes:—"The first of these curious Ducks I shot on 14th April; it was a male. On the 7th May, in the same pond, I noticed two males and three females. The males were rushing after one another, every now and then stopping short beside the females, and hoisting their very peculiar tails straight in the air, spreading out every feather to its utmost, until the tails looked exactly like a hand with all the fingers spread out. They were still in the same place on 28th May and, no doubt, had nests."

Canon Tristram tells us that on the Halloula Lake, in Northern Africa, "we found two nests of the White-headed Duck (*Erismatura mersa*) among the sedge, containing, the one three, the other eight eggs. These are very large for the size of the bird, almost perfectly elliptical in shape, and a line longer and wider than those of the Velvet Scoter, of an extremely rough texture, unlike that of any other Duck, more resembling the egg of the Bean-Goose, but far more coarsely grained, and of a dull white colour. The habits and flight of the bird are more like those of a Grebe than a Duck; it often saves itself by diving, and remains under water for a considerable time."

Writing of Transylvania, Messrs. Danford and Harvie Brown say:— "This curious Duck, which we found in Mezöség, is not very common. We met with a flock of nine or ten birds at a small reedy lake near Záh; but, owing to the difficulty of paddling the wretched square-ended canoes or punts (*csónak*), the only substitutes for boats in the country, we found great difficulty in getting near them, and for some days only succeeded in shooting one male, and that at very long range. A couple of days before our departure, however, we were more fortunate; the birds were tamer, and let us get a number of long shots, by which we killed three more males and a female. They never attempted to leave the lake, but after a short rapid flight pitched again, generally about the same place. They swam very fast, keeping their stiff woodpecker-like tails erect at right angles with the body, and when wounded, though they dived constantly, showed no disposition to escape, like other Ducks, by hiding among the reeds, but, on the contrary, avoided them. The bill of the male, when newly killed, is of a beautiful pure ultramarine, this colour extending even to the interior of the mouth. It soon fades, being merely connected with a thin, easily moved membrane; and in twenty-four hours the bill loses its brilliant appearance, turning to a brownish grey."

Mr. F. Finn tells us that a captive specimen in Calcutta floated low in the water, but not submerged, and the tail was kept more or less raised above the level of the back.

The authors I have quoted regarding the habits of this Duck, seem agreed that this bird, when swimming, holds its tail more or less erect, but we find Mr. Abel Chapman telling us that the tail of this Duck is carried under water as a rudder. He and Mr. W. J. Buck in their charming book, "Wild Spain," say :—

"Presently the binocular rested on six of the most extraordinary wild-fowl we ever met with—gambolling and splashing about on the water, chasing each other, now above now beneath its surface like a school of porpoises; they appeared half birds, half water-tortoises, with which the lagoon abounds. We were well sheltered by a fringe of sedges, and presently the strangers entered a small reed-margined bight, swimming very deep, only their turtle-shaped backs and heavy heads in sight. Here we crept down on them, and as they sat, splashing and preening in the shallow water, stopped three—two dead, the third escaping, winged. They proved to be a duck and drake of the White-fronted Duck, *Erismatura mersa*—heavily built diving-ducks, round in the back, broad and flat in the chest, with small wings like a Grebe, and long, stiff tails like a Cormorant—the latter, being carried under water as a rudder, is not visible when the bird is swimming. The enormously swollen bill of the drake—pale waxen blue in colour—completed as singular a picture of a feathered fowl as the writer ever came across: they were, in fact, no less remarkable in form and colour, now we had them in hand, than they had at first appeared in the water."

The eggs of this Duck, of which there is a large series in the British Museum from Spain, Algeria, the Dobrudscha and Southern Russia, are well described by Canon Tristram in his note, above quoted. I have only to add that many of the eggs have a very pale tinge of green. They are out of all proportion to the size of the bird, and measure from 2·6 to 2·8 in length, and from 1·95 to 2·05 in breadth. Most of the eggs are truly elliptical, but a few are slightly pointed at one end.

The perfectly adult male has the crown of the head black. With this exception, the whole head is white, followed by a broad black collar which covers nearly the whole neck. The upper part of the breast, its sides, and the whole of the sides of the body are closely cross-barred with rich chestnut-brown and black. The lower breast and the abdomen are brown, each feather broadly tipped with satin-white or very pale grey. These tips fail to conceal the main brown portion of the feathers, and the lower plumage presents the appearance of being barred, in a very irregular manner, with brown and grey. The under tail-coverts are pale fulvous, cross-barred with black. The mantle is reddish brown, closely vermiculated with blackish. The back, the scapulars, and the long flank-feathers, which reach nearly to the tip of the upper tail-coverts, are closely vermiculated and speckled with black and pale fulvous. The rump is cross-barred with black and grey. The upper tail-coverts are chestnut; the tail blackish brown. The upper wing-coverts are brown, speckled with fulvous. The primaries are pale drab-brown, rather darker on the outer web and at the tip than on the inner web. The outer secondaries are of much the same colour as the primaries, but the inner, long secondaries are much darker brown. The outer web of all the secondaries is mottled with fulvous. The axillaries are pure white; the under wing-coverts are mixed ashy and white.

Younger males differ from the adult males, above described, in having the feathers of the crown brown, often tipped with fulvous. The breast-feathers are broadly tipped with very bright golden-fulvous, without a trace of black bars. The hindneck is dark brown, but the other parts of the broad collar round the neck are grey or fulvous, closely barred with dark brown. The upper plumage is of a richer fulvous, and the lower plumage is often suffused with rich golden brown. Males in this state of plumage often have the upper tail-coverts barred as in the female; not chestnut, as in the adult male.

The series of males of this species in the British Museum, which bear dated labels, were procured from December to March, and the un-dated specimens appear to be birds in ordinary winter plumage. Many of these exhibit one or two tiny white feathers mixed with the dark ones on the crown. It is difficult to account for the presence of these white feathers, except on the supposition that in summer the drake acquires a white crown, in place of the dark one. That birds in this plumage have not yet been observed is not remarkable, seeing how little is known of many of the common Ducks in summer plumage. The Stiff-tailed Duck is at all times a rare bird, occurs in countries where observers are not numerous, and the drake may well have been overlooked in summer, even by those naturalists who have found the nest.

The adult female differs from the male chiefly in respect to the colour of the head. The whole of the forehead and crown, to a point below the eye, are rich brown. A broad white band runs from the base of the upper mandible, on either side, to the back of the head, followed below by a broad brown band. The chin and throat, and the whole space between these brown bands, are pure white. The hindneck is brown and the broad collar round the neck is grey or fulvous, closely barred with dark brown as in the male. The other parts of the plumage and the wings do not differ from the same parts in the male, except that the upper tail-coverts. are cross-barred like the rump, not plain chestnut.

Male : length about 17 ; wing 6½ ; tail 4. Female : length about 16 ; wing 6 ; tail 3½. The bill in old drakes is blue ; in females and young males, dull plumbeous. The irides are dark brown. The legs and feet are bluish black. The weight of this Duck does not appear to have been recorded.

THE MERGANSERS.

THE Mergansers or Saw-bills differ from all other Ducks in having a narrow bill, quite unlike that of an ordinary Duck, and furnished on the margins of both mandibles with a series of distinct sharp-pointed, saw-like teeth, curving backwards. The Mergansers have longer wings and lighter bodies for their size than the diving Ducks, and are more powerful on the wing. They have the primaries coloured as in the True Ducks, but the contrast between the two webs of each quill is perhaps not quite so strong. Like the Ducks also, the males have a post-nuptial plumage, apparently very closely resembling that of the female. The Mergansers have strong feet, the toes being much longer than the tarsus, and these birds possess unrivalled powers of diving.

The Mergansers may be divided into two minor sections: the Mergansers and the Smews.

The Mergansers are of about the size of an ordinary Duck. The bill is about the length of the head, and extremely narrow. The crown is furnished with a conspicuous crest in both sexes. In the Goosander, the crest of the male is thick and bushy, and about one and a half inch in length; that of the female is longer, some of the feathers measuring two and a half inches in length, and more pointed. In the Red-breasted Merganser, the crest of the male is very narrow and straight, and in a measure double, the longest feathers measuring about three inches. The female has a much shorter crest, also narrow and straight, the feathers seldom exceeding a length of an inch and a half.

Mr. W. P. Pycraft has kindly drawn my attention to the very peculiar formation of the trachea in the Mergansers, by means of which the sexes may be determined without dissection or regard to plumage. The trachea of the male Goosander has two enlargements; that of the female only one. In the male Red-breasted Merganser, the trachea has one enlargement; that of the female has none at all. These enlargements, or the absence of them, can be easily felt by passing the forefinger and thumb down the sides of the neck of the birds, from the head to the base of the neck.

The Smew is about the size of a Wigeon. The bill is very small, and much broader at the base than at the tip. The crown of the head of both sexes is furnished with a bushy crest, about one inch in length.

The differences between the Goosander of India and the Goosander of Europe and Northern Asia are very small, and I do not follow Count Salvadori in keeping the two races distinct. The male of the Indian bird has ordinarily broader black margins to the inner long secondaries; the female has the crown of the head tinged with grey.

More than thirty years ago, Gould described a species of Merganser from China. The bird is now in the British Museum, and is the only specimen of the species known. In the general colour of its plumage, it resembles the female of the Red-breasted Merganser. It is obviously an immature male, and has already acquired some black feathers on the back and the double-barred wing of the adult male. This species, named *Mergus squamatus* by Gould, is remarkable in that it has the sides of the breast and the sides of the body pale buff, each feather with a double crescentic black band, one within the other, and parallel to the margin of the feather. If this bird really came from China, and Gould expresses no doubt on the matter, it may be looked for in Upper Burma and the Shan States.

No other species of Merganser can be expected to occur within our limits.

123. THE GOOSANDER.

Merganser merganser, (LINNÆUS).*

Outer web of the primaries blackish; inner web drab, with a blackish tip.
Axillaries and under tail-coverts pure white.
Margins of the bill furnished with saw-like teeth.
No black band across the white of the folded wing.

MALE:—Head black, sharply defined from the white neck; sides of the body pure white.

FEMALE:—Head and neck chestnut-brown, sharply defined from the body-plumage; sides of the body grey, freckled with white.

VERNACULAR NAMES:—None known.

THE Goosander is a permanent resident in the Himalayas from Kashmir to Assam; and a not uncommon winter visitor to the plains of the northern part of the Empire.

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* *Merganser castor* and *Merganser comatus* of the British Museum Catalogue.

This Duck has been observed in so many localities in the plains that it is unnecessary to trace its distribution in any great detail, and I propose to indicate only a few points which may be considered, so far as we know at present, its southern limits.

The bird, said to be of this species, which was procured by Mr. E. H. Aitken in the Bombay harbour, from the fact that it was found on salt water, was presumably a Red-breasted Merganser. Omitting Bombay, therefore, from consideration, and commencing on the west, we find this bird recorded from Dera Ismail Khan and next from Ajmere. In the Central Provinces it has been obtained as far south as Raipur and Sambulpur. It is fairly common in Chutia Nagpur as far down as Singbhum, and it has been observed in Bengal at Bancura and Bardwan, not very far north of Calcutta. This species is found throughout Assam and the mountain streams of the ranges of hills extending to Sylhet and Cachar, and it is very abundant in the upper reaches of the Irrawaddy river from Sinbo to Myitkyina.

In the Himalayas this species is found in summer at elevations above 10,000 feet. In winter it comes down to below

2,000 feet, and no doubt most of the birds scatter themselves over the plains.

The Goosander occurs over the whole continent of Europe and a great part of the continent of Asia. In summer this species is found within the Arctic circle. In winter it moves down to Southern and Central Europe and rarely to north-west Africa. It occurs at that season in China and Japan. In Central Asia and the Himalayas it appears to be more or less of a constant resident, moving vertically according to season, or migrating short distances only, as from the Himalayas, for instance, to the neighbouring plains of India.

In the plains, the Goosander arrives about the end of November and leaves in March.

The Goosander is a common bird in the Upper Irrawaddy, and occurs in small parties of from two or three to six. Owing to my being obliged to travel about in steamers, I never succeeded in shooting one of these birds, but Commander A. C. Yorstoun kindly procured one and sent me the skin for identification. These birds are by no means very wild, but they generally keep out of gun-range. They frequent the clearest parts of the river, where the current is strong and the water flows over a pebbly bottom. I have never seen them near mud and weeds, and I believe that they eat nothing but fish. They dive incessantly and come up in the most unexpected places. They dive both up and down stream and remain a very considerable time under water. Frequently they sit fairly high on the water, but they possess the power of submerging the body, and when alarmed or wounded, or swimming up-stream, little more than the head and neck is visible above water. From the backward position of the legs of this Duck, it might be imagined that it could hardly walk, but Mr. Finn assures us that the Goosander walks as well as most Ducks. The cry of this species is usually a harsh croak, but Mr. Booth describes the note of the female and young birds as a low plaintive whistle. The flesh of the Goosander, as might be expected, is remarkably rank and is not fit for the table.

The Goosander is almost invariably found in fresh waters, and it is only in very severe frosty weather that it goes to sea. It has a preference for clear water flowing over pebbles and rocks, and it is seldom found far from forest.

I reproduce the following remarks on the Goosander from Mr. E. T. Booth's "Rough Notes":—"An adult female with her half-fledged brood resting quietly in the bright sunshine on the unruffled surface of one of the larger lochs, presents a sight that would doubtless prove puzzling to one unacquainted with the habits of these singular birds. The female, ever on the alert for the first signs of danger, floats motionless with her head drawn back and beak resting on the feathers of the breast, the youngsters by whom she is surrounded appearing to vary in colour from a creamy salmon to a dull slate. One moment half or three-fourths of the brood show up the former conspicuous tint, while shortly after a transformation takes place and the colours are reversed. A glance through a strong binocular at once solves the mystery, and reveals the half-fledged juveniles spreading themselves out to enjoy the warmth of the sun. From time to time a portion of the brood turn over on their backs, remaining often in this position for several seconds; the next minute a bird or two may be seen, each with one foot flapping in the air and paddling slowly round with the other; while engaged in these antics the bright colours of the underpart are clearly exposed to view. . . .

"Throughout the districts in which I met with Goosanders during the breeding season, the females appeared in some instances to resort to situations for nesting purposes at a considerable elevation on the hills. A cavity in a large and partially decayed birch was pointed out by a keeper as the spot from which some eggs (previously seen in his possession) had been taken. The old and weather-beaten stump was on the outskirts of a thicket of birch, fir, and alder, stretching from a swamp up a steep brae, and within a mile of a loch on which I have repeatedly watched two or three broods. The tree was carefully examined, and I noticed that down from the breast of the bird was still clinging to the rotten wood; the general appearance also of the rubbish in the hollow left little doubt as to the truth of the statement. . . .

"Goosanders are blessed with a strong, healthy appetite, their visits at times proving exceedingly distasteful to the custodians of lakes and rivers. When wounded or alarmed, I have occasionally remarked that an immense quantity of fish was thrown up. After a shot with a punt-gun, some winters back, on Heigham Sounds, in the east of Norfolk, at a number of these birds sitting with other fowl at the edge of a wake on the ice, scores of small rudd and roach were discovered lying on the surface where the flock had been resting. On the upper waters of the Lyon, in Perthshire, while concealed among the alders on the bank of the river, I watched, at the distance of only a few yards, eight or ten immature birds diving for food in the shallows among some large stones. At last the party appeared satisfied, and paddled slowly to some ledges of rock, apparently with the intention of landing, when, offering a good chance, five were stopped with the two barrels. The quantity of trout, all perfectly fresh, that were shaken from their throats would have more than half filled a moderately sized fish-creel.

"When unmolested this species is by no means shy; in many of the Highland glens I have seen them resting on the stones by the river-side, within a short distance of the road, paying little or no attention to the traffic."

The nest of the Goosander has not yet been taken in the Himalayas, and we owe all we know regarding the breeding of this bird to European writers. Mr. Robert Read, writing to Dr. Sharpe, says:—"A nest which I found in Perthshire was in the head of a hollow wych-elm in a steep wood sloping down to a large fresh-water loch. It contained twelve eggs of a buffish tint, the last laid being much paler than the others. It consisted simply of a mass of down of a pale lavender-colour, almost white, with which was mixed up a lot of chips and fine particles of rotten wood."

Mr. Seebohm writes:—"The favourite nesting-place of the Goosander is in a hollow tree-trunk; but in localities where such sites are not plentiful, it shows considerable fertility of resource and capability of adaptation to circumstances in choosing the best substitute. On these occasions, however, it often displays more wit than wisdom. As the House-Martin has discovered that under the eaves of a roof a better shelter for its nest is to be found than under an overhanging cliff, so the Goosander immediately avails itself of the wooden boxes which the Finns fasten up in the trees to tempt them. These boxes, or "holkar," are made with a trap-door behind, so that the peasant may daily rob the nest, and thus make the too-confiding bird lay a score or more eggs before the wary man thinks it prudent to cease his depredations, and allow the Goosander to sit upon the rest for fear of spoiling his next year's harvest. If these boxes be not provided, and no hollow trees are available, the Goosander finds a hole under a rock or a cleft in the cliff, and has been known to utilise the old nest of a crow or bird of prey in a tree or the top of a pollard willow."

The Goosander commences to build its nest as early as the end of April, and eggs may be found up to the middle of June. The eggs are eight to twelve in number. Most of the eggs are perfect ellipses, rather elongated; a few have one end rather more pointed than the other. The shell is smooth and fairly glossy. In colour the eggs are a warm creamy buff. They measure from 2·5 to 2·9 in length, and from 1·8 to 1·9 in breadth.

The adult male has the whole head, crest and upper neck, glossy black. The lower neck, the upper part of the mantle, the whole lower plumage, sides of the body, axillaries and under wing-coverts are white, tinged with salmon or pink during life. The thighs and the sides of the rump are white, vermiculated with grey.

The lower part of the mantle and the upper back, together with the long inner scapulars, are deep black. The lower back, the rump and the upper tail-coverts are ashy grey with dark shafts. The tail-feathers are ashy brown with black shafts. The winglet, or small quills on the edge of the wing, are black. The upper wing-coverts along the edge of the wing, and those next the white scapulars, are grey mottled with black. The remaining upper wing-coverts are pure white; the larger, lower series with concealed black bases. The primaries have the inner web drab, its tip and the whole outer web dark brown or blackish. The first four secondaries have the outer web black, the inner brown. The remaining short secondaries are wholly white. The long inner secondaries are white with a black margin, the last one with the inner web almost entirely black. The two innermost secondaries are uniformly brown.

The male in post-nuptial plumage resembles the female, but has traces of a black ring round the neck and the normal white wing of the winter plumage.

The adult female has the chin and throat white tinged with rufous. With this exception, the whole head, the crest and the neck are chestnut-brown, the crown somewhat darker and tinged with grey. The whole upper plumage, the tail, the first and second series of upper wing-coverts, and the scapulars are grey, each feather with a black shaft. The whole lower plumage is white; the sides of the breast and of the body more or less grey, freckled in places with white. The under wing-coverts and the axillaries are white. The last series of the upper wing-coverts are white with concealed ashy brown bases. The primaries and the outer secondaries resemble those of the male, and there is the same white speculum. The inner long secondaries are ashy grey with dark brown margins.

Ducklings change into a plumage very closely resembling that of the adult female, and the crest seems to be fully developed from the very first.

Young males commence to acquire the adult plumage about February, and the change goes on throughout the spring. The parts first affected are the back and the throat, which turn black by a change of colour in the feather. The wings probably remain unaltered till the autumn moult.

The male is considerably larger than

the female. Male: length about 26; wing 11½; tail about 5. Female: length about 24; wing 10½; tail 4½. In both sexes, the bill is vermilion or deep red, with the nail blackish. The irides vary from brown to deep red. The legs and feet are red. Weight up to 3¼ lb.

124. THE RED-BREASTED MERGANSER.

Merganser serrator, (LINNÆUS).

Outer web of the primaries blackish; inner web drab, with a blackish tip.
Axillaries and under tail-coverts pure white.
Margins of the bill furnished with saw-like teeth.
With one or with two black bands across the white of the folded wing.

MALE :—Head black, sharply defined from the white neck; two black bands across the white of the wing; sides of the body vermiculated with black.

FEMALE :—Head and neck more or less rufous, not sharply defined from the body-plumage; one black band across the white of the wing; sides of the body brown, margined with grey.

VERNACULAR NAMES :—None known.

THERE are only two properly authenticated instances known of the occurrence of the Red-breasted Merganser within the limits of the Indian Empire. The first specimen was shot by Colonel Yerbury in the Karachi harbour, and the wings of this bird are now in the British Museum. The second specimen is in the Indian Museum, Calcutta, and we are informed by Mr. F. Finn that this bird was obtained in the Calcutta market. It must, therefore, have been caught somewhere in Bengal.

There is no reason to think that the Red-breasted Merganser is an excessively rare bird in India, but being entirely a sea-coast species, it is, no doubt, seldom observed.

The Merganser which was supposed, by an error, to have been shot by Captain E. Bishop at Manora Point, Karachi, was in reality shot outside our limits. Captain Bishop, writing to Mr. Cumming on February 21st, 1890, says:—"The Merganser presented by me to the Karachi Museum was shot at Charbar, Mekran Coast, and not at Karachi, as stated in Mr. Murray's work."

The bird of this group which Mr. E. H. Aitken obtained in the month of December in the Bombay harbour, from the fact of its being found on the sea-coast, was most probably of the present species, and not a Goosander. It was an immature bird, and the determination of these birds, when young, was not such an easy matter some years ago as it is now.

The Red-breasted Merganser ranges all over the northern hemisphere, being found in summer from the 50th degree of north latitude up to, and within, the Arctic circle. In winter it is found in Southern Europe, and a considerable portion of Southern Asia from the Black and Caspian Seas to China and Japan, and it occurs at this season in the greater part of the United States of America.

The Red-breasted Merganser at the breeding season frequents fresh-water lakes and rivers which are not very distant from the sea; but at other times it is essentially a salt-water bird, being almost invariably found on the sea-coast and in the estuaries of rivers. It prefers those parts of the coast which are rocky.

This species is not usually seen in large flocks, except in winter. At other times it is found in small companies, or even in couples. Its habits do not differ in any important respect from those of the Goosander, but, being a sea-coast bird, it appears to find a good deal of its food among the sea-weed. As a rule the flesh of this species is as unpalatable as that of the Goosander, but at times it is said to be free from any fishy flavour.

These birds have a quick and powerful flight, but they rise from the water with a considerable splash and generally fly low. They possess the power, like the Goosander, of sinking the body in the water at will, till only the head and neck are visible.

The following extracts will, I trust, enable my readers to form a good idea of the general habits of this species in Europe.

Writing of this species in his "Bird-Life of the Borders," Mr. Abel Chapman says :—"Exquisitely graceful in form and plumage, it is yet so wholly useless when killed, that no professional fowler would waste a charge of powder and shot over them. The Mergansers are, nevertheless, the most timid, wild, and utterly inaccessible of all the wild birds of the sea. So keen and alert is their vision, and so hateful the human race, that they will not, wittingly, allow the presence of a punt on the same square mile of sea as themselves ; it is, in fact, often ludicrous to observe the immense distances at which their almost irrational timidity bids them decamp. Spending the night at sea, they enter the estuaries at dawn, and for the period of daylight succeed in setting at naught all the arts and stratagems of man —to them indeed, and to the Golden-eyes, belongs alone of all their watchful tribe the credit of out-manœuvring and nullifying the most elaborate devices of their arch-enemy. They systematically enter waters which are as free and open to punts as to themselves, remain there for their own purposes all day, and, evading every artifice to outwit them, leave again at night for the open sea, without losing the number of their mess. Of course, in punting year after year, a stray chance does turn up at intervals to work in a successful shot, but as a rule Mergansers and Golden-eyes are more than a match for the most skilful fowler that ever went afloat.

"The only shots I have known at Mergansers from a punt have occurred either when they are caught sunning themselves round a bend in a curving sand-bank—this is a habit they often indulge in at midday, when a dozen may often be seen basking together—or in a narrow 'gut' where a punt can creep up unseen. They rarely, however, trust themselves in such dangerous spots, and if they should happen to find themselves hemmed in, in a *cul de sac*, will attempt to dive back past the punt rather than fly over 'dry' land (or what Mergansers may regard as such). They feed entirely on shrimps and small fish, and are quite uneatable. There are, however, few more beautiful objects than a newly-killed Merganser drake. As he lies on the fore-deck—the weird, half-uncanny expression in his blood-red eye still undimmed; the slim, snake-like neck and glossy head, adorned with its long double crest—one-half standing straight out backwards, like the 'toppin' of a Peewit, the other pointing downwards toward the back (*not pendent*, as invariably represented in books); then the lovely but evanescent salmon hues which tinge his breast—all these points, together with the bold and brightly contrasted plumage, combine to form as beautiful an object as any that Nature has produced."

Sir Ralph Payne-Gallwey quite corroborates this account of the wariness of the Merganser. He says:—"Of all wild-fowl, except perhaps Golden-eyes, they are the most restless and wary; never quiet, always swimming, diving, and flying, and to no apparent end. I never yet saw one at rest with head down, and bill tucked under the wing. They are ever on the look-out, and though there may be hundreds on all sides, they cannot be approached within a long shot, without the best of luck and care. Any fowler who can now and then push his punt within shot of these birds may rest assured that he is most favourably equipped for shooting. It is the best of practice for a beginner. He will be surprised how tame Duck and Wigeon will afterwards appear. All Mergansers, from their piscivorous habits, are unfit for food, but offer from time to time such tempting shots that it is not in mortal to pass them by."

Dr. Saxby, referring to the nesting habits of the Red-breasted Merganser in Shetland, says:—"Although they often lay amongst long grass, they seem to prefer the shelter of a roof of some kind, and thus it is that the eggs are most commonly found under rocks, in rabbit-burrows, and even in crevices in old walls; but, whatever may be the situation chosen, the nest always consists of a hollow scraped in the ground, and lined to a greater or less extent with down, feathers and dead plants, the amount of material being increased as incubation proceeds."

In addition to the sites mentioned above, this species is said to breed also in holes of trees like the Goosander.

The Red-breasted Merganser nests in May or June, and lays as many as twelve eggs. The eggs are not unlike those of the Goosander, but are smaller and generally of a darker creamy-buff colour, often slightly tinged with green. They measure from 2·4 to 2·8 in length, and from 1·6 to 1·85 in breadth.

The adult male has the whole head, crest and upper neck deep, glossy black. The lower neck is white, with a black longitudinal band on the hinder part. The chest and the sides of the mantle are rufous, streaked with black. The lower plumage is pure white, except the sides of the body, which are vermiculated with black. The axillaries are white, and the under wing-coverts largely so. The middle portion of the lower hindneck, the mantle, the back and all the long inner scapulars are deep black. The lateral feathers of the back, near the junction of the wing with the body, are much lengthened and have the central portion pure white. The outer scapulars are white. The rump and the upper tail-coverts are vermiculated with ashy grey and black. The tail is ashy brown. The first series of upper wing-coverts, along the margin of the wing, is brown; the second or middle series is white. The third series is white, with partly concealed black bases, the portion visible forming a black band across the white of the wing. The primaries are drab on the inner web, the tip black; the outer webs are entirely black. The first four secondaries are blackish, with some white at the tip of the inner web. The next six are white, the base of the outer web black, the base of the inner web brown. The visible portions of the black bases of the outer webs form a second black bar across the wing. The next secondaries are white, margined with black; the innermost secondaries are plain brown.

With regard to the post-nuptial plumage of the male, Seebohm remarks:—"Males in moulting-dress closely resemble males in first plumage, but have the dark markings on the breast and flanks slate-grey instead of brown." Yarrell says that "old males from early spring till their autumn moult begins, lose the rich glossy green of the head and neck, which degenerates into an obscure brown, while the fine chestnut colour of the breast entirely disappears." Lastly I quote from

Mr. Dresser. He writes:—"In the plumage that the male of this species assumes for a short time during the summer, it resembles the female, but is distinguishable by its larger size, the different colour of the abdomen and of the scapulars." These descriptions are conflicting, and I regret that I have seen no specimens of this Merganser, in post-nuptial plumage, to enable me to clear up the question.

The adult female has the crown and the crest deep reddish brown; the sides of the head and of the neck, chestnut mottled with white; the chin, throat and foreneck, white mottled with chestnut; the hindneck reddish brown. The whole upper plumage, the first and second series of upper wing-coverts and the scapulars are dark brown, each feather margined with ashy. The tail is ashy brown. The lower plumage is white, the sides of the body brown with greyish margins. The axillaries are white; the under wing-coverts nearly entirely so. The outer feathers of the larger series of upper wing-coverts are white, tipped with black, and with blackish bases, partially concealed. The visible portions of the bases of these coverts do not, however, form a black bar across the wing, as in the male, owing to the coverts immediately above them being brown, not white. The primaries and the outer secondaries resemble those of the male, the concealed black bases of the latter forming, as in the male, a broad black bar across the wing, below the white wing-coverts. All the inner, long secondaries are dark brown.

Ducklings change from down into a plumage resembling that of the female. The young drakes do not appear to assume the full plumage of the old drake until the second autumn.

Male: length about 25; wing 9½; tail 3½. Female: length about 22½; wing 8½; tail 3¼. The male has the bill deep vermilion, with the ridge dusky. The legs are also deep vermilion. In the female the bill and legs are paler red. In both sexes the irides are blood-red; in the young they are yellow. The weight is said to run up to about 2 lb.

125. THE SMEW.

Mergus albellus, (LINNÆUS).

Outer web of the primaries blackish; inner web drab, with a blackish tip.
Axillaries and under tail-coverts pure white.
Margins of the bill furnished with saw-like teeth.
With two white bands across the black of the folded wing.

MALE:—Crown of the head white; with some black bars on the sides of the breast.

FEMALE:—Crown of the head chestnut; with no black bars on the sides of the breast.

VERNACULAR NAMES:—*Nehenne*, Hind.; ?*Jhalow*, Oudh.

THE Smew appears to be a fairly common bird, in winter, in the northern parts of the Empire. So far as we know, this species is not a resident in the Himalayas, but merely crosses these mountains on migration. The Smew is found in the

Punjab, Sind and Northern Guzerat; also in the North-west Provinces and Oudh. It also occurs in Bengal, where Dr. Blanford met with it near Raniganj; and in Orissa, whence it is recorded by Dr. Jerdon. There are several skins of this species in the British Museum that were procured by Falconer in Bengal.

I can find no notice of the occurrence of this species in any part of the Empire east of Bengal, but there is apparently no reason why it should not occur commonly in Assam and thence down to Upper Burma.

The Smew in summer is found throughout Northern Asia and over a great part of Northern Europe, up to the Arctic circle. In winter it migrates as far south as the Mediterranean, the Black and the Caspian Seas, India, China and Japan.

The Smew arrives in Northern India in November and leaves again in March. The birds that visit us are mostly immature, and only a small proportion consists of old males and females.

Although the Smew, in most parts of its range, frequents alike salt and fresh water, here in India it seems to be exclusively a fresh-water species, being found on tanks and lakes of considerable extent and on the larger rivers. It is generally found in flocks, amounting sometimes to as many as forty, but more frequently not exceeding a dozen or twenty.

Little has been written by European authors regarding the habits of this species, and I shall here reproduce some of Mr. Hume's excellent notes on the Smew as observed in India in winter. He says:—"As a rule, they are wary birds, and difficult to approach. They keep in deep water, far away from any cover, and you can only shoot them from a boat. They can swim faster than any ordinary up-country native boat can be propelled, and faster than one can paddle a punt when lying down. They keep a very sharp look-out, never diving *en masse*, but some always watching while the rest are under water, and, as a rule, the moment they see *any* boat they swim away. . . . If you wait, as one does with most other fowl, till you can make certain what they are, they see you, and away they go swimming with little but their heads and necks visible, faster than you can paddle. But at times, I presume when they have never previously been fired at, you can get within shot without difficulty in a punt, and even by a little management in a common native boat, and you can always get a shot by sailing past them at about forty yards distance.

"They swim and dive splendidly, and if only a single boat is after them, they will constantly stick to the water even after being fired at, rising perhaps at the moment, but dropping within fifty yards, and instantly diving to reappear from fifty to a hundred yards beyond the place at which they vanished. They come up scattered, but all swim converging on one point, and in a few minutes are swimming away in a close lump, just as before you fired. But if two or three boats hem them in, they generally rise, and, if the place is small, disappear—if large, circle round and light again a couple of miles off. They spring out of the water with ease, and fly with great rapidity, quite as quickly and easily as the Common Teal, but almost silently, and with less of a perceptible wing-rustle than any species I know. This is probably due to their very narrow, pointed, somewhat curved wings, by which they can be instantly recognised when flying. They are very active, restless birds, almost always busy swimming and diving. I have never seen one on land, but I once saw a number asleep on the water about midday in March.

"They feed entirely under water. . . . No Duck can touch them at diving: even Grebes and Cormorants—and I have watched both perform the same manœuvre,—are scarcely so rapid in their movements under water. They use their wings in diving, though they do not spread them fully, so that you must not judge of their performance by birds with wings injured above the carpal joint; but where the injury is merely on the carpus, sufficient to prevent flight, but not otherwise serious, their diving is a thing to watch."

Mr. E. T. Booth, in "Rough Notes," thus describes the manner in which the Smew pursues and captures its prey:—"Several times this active little diver returned to the surface, having evidently met with no success, as after looking wistfully round he instantly plunged again. At last, with an unusual flutter, causing a perceptible ripple on the water, the hungry bird dashed up to within thirty yards of the punt, making frantic but apparently vain efforts to swallow a fish protruding at least a couple of inches from his bill. With distended throat and widely-opened mandibles, he swam round and round in circles, stretching forward his neck, and repeatedly dipping his bill below the surface for the distance of two or three yards; from time to time he lifted his head in the air with a resolut-shake. After these antics had been continued for some five or six minutes, the bird seemed to have satisfactorily disposed of his troublesome capture, and rising half out of the water commenced flapping his wings in the most vigorous manner. This was a chance not to be lost, and a charge from the punt-gun at about sixty yards laid this diminutive wanderer from the north dead as a stone on the water. On examination the stomach was found to contain one fresh roach of such dimensions that, when the small gullet of the bird was considered, it appeared a mystery how the little glutton succeeded in getting it down. There were also the bones of another fish of the same species, several minute shells and stones, and some fibrous grassy roots; the latter were probably portions of the weed torn up from the bottom when the shells were swallowed."

The nest of the Smew has been found

in Northern Europe on more than one occasion. Mr. Wolley's account of the breeding of this bird is unfortunately much too lengthy to be reproduced here, but Mr. Seebohm gives us a description of the breeding haunts of the Smew in Russia which I shall quote. He says:—"Harvie-Brown and I were fortunate enough to secure eggs of the Smew in North-east Russia. A few miles to the south of the Arctic circle, in the valley of the Petchora, is the small town of Haberiki, containing about a dozen houses. The timber for about a mile round has been cleared, but beyond the country consists of alternate lake, swamp, and forest. Grand old pines and larches, with stems three or four feet in diameter, conceal charming little alder and willow-fringed pools, and fallen trunks, covered with moss and lichen, provide excellent cover for watching the Ducks swimming fearlessly in these little paradises. The Smew is the greatest ornament of these picturesque little spots, but is not quite so common as Teal, Wigeon, and Pintail. We did not succeed in taking the nest of the Smew; but having commissioned some of the villagers to bring us eggs and down of Ducks, we were delighted to receive a clutch of what looked like Wigeon's eggs, with pale grey down. The man who brought it knew the bird well, and told us that he had taken the eggs from a hollow tree."

Some of these eggs brought by Mr. Seebohm from the Petchora are now in the British Museum. They are nearly elliptical in shape, very smooth and glossy. They are of a pale cream colour, and measure from 1·9 to 2·05 in length, and from 1·42 to 1·52 in breadth.

The Smew generally breeds in the month of July, and lays seven or eight eggs, which are placed in the hollow of of a tree or in one of the boxes hung up by the villagers for the use of the Golden-eye.

The adult male has a large, black patch in front of, and below, the eye; and a short black band on either side of the back of the head, the two bands not quite joining behind. With these exceptions, the whole head, the neck, and the lower plumage, with the axillaries, are pure white. The sides of the body are very delicately vermiculated with grey. The under wing-coverts are partly white and partly black. The upper part of the mantle is white with some of the feathers tipped with dusky. The back and the upper part of the rump are deep black. A narrow, crescentic black band springs from the upper back, and passes along the side of the breast. Many of the feathers at the shoulders are white with broad black tips, and some of these are concealed by the folded wings. The lower part of the rump and the upper tail-coverts are deep ashy with darker shafts. The tail is greyish brown. The inner scapulars are chiefly white, the outer, ashy brown. The lesser upper wing-coverts, near the edge of the wing and next the scapulars, are black, edged with whitish. The middle series of coverts is pure white. The large coverts, or third series, are black with narrow white tips. The inner webs of the primaries are drab, the tips and all the outer webs black. All the short secondaries are black, tipped with white. The first long secondary has the outer web white margined with black ; the remaining secondaries are ashy grey.

The drake in post-nuptial plumage closely resembles the female, but may be recognised by the black-tipped feathers on the shoulders and sides of the breast.

The adult female has a large blackish

patch, surrounding the eye, reaching to the bill in front, and to the side of the throat below. The forehead, the crown, the crest and the sides of the head are chestnut. The chin, the throat, the foreneck and the whole lower plumage, with the axillaries, are pure white, the breast tinged with ashy and with a brownish band across the base of the foreneck. The sides of the body are ashy brown; the under wing-coverts, a mixture of white and brown. The whole upper plumage and the scapulars are dark ashy brown, the back and rump almost black, and every feather margined paler. The tail is ashy brown. The whole wing, in every feature, resembles that of the adult male.

Ducklings change from the down into a plumage resembling that of the adult female, but the face is chestnut like the crown, there being no trace of any dark patch on that part of the head. The white upper wing-coverts are also margined with grey or brown, and the feathers of the crown and crest are tipped with black. According to Macgillivray, the drake does not assume the full plumage of the adult till the third autumn.

Male: length about 17½; wing 8; tail

3½. Female: length 16; wing 7¼; tail 3¼. The bill is bluish grey, with the nail whitish. The irides are brown or reddish brown in the young bird, red in the adult. The legs and feet are bluish grey with the webs dusky. Weight up to 1¾ lb.

THE SNIPES.

THE Snipes, which include the Wood-Cocks, the True Snipes and the Painted Snipes, form a small section of the large group of Waders (*Limicolæ*). In addition to the characters assigned to them at the beginning of this volume, they may be recognised by their peculiar plumage, which is chiefly composed of black, buff and rufous. The Snipes in general are remarkable for their abundance, the sport they afford, and the excellence of their flesh for the table.

In the Wood-Cocks and True Snipes the sexes are alike; in the Painted Snipes the sexes differ in colour. Many of the Snipes have tails of peculiar construction, the outer feathers being frequently very narrow and pin-like. Snipes have but one moult a year, and they undergo no seasonal change of plumage. They vary individually in proportion to the degree in which the margins of the feathers get worn down. The eyes of the Snipes are very large and placed far back in the skull. The birds feed chiefly by night.

Snipes are represented over nearly the whole world. The characters of most importance in separating the species are the general colour of the primaries; the colour of the outer web of the first primary; the marks on the crown of the head; the colour and shape of the tips of the outer secondaries; and lastly the number and shape of the tail-feathers. Snipes' tails, however, are frequently imperfect in some respect or other, and too much reliance must not be placed on this character.

The bill of the Snipes is very sensitive, and there can be little doubt that the food is found chiefly by touch. The closed bill is inserted into the soil again and again till a worm is felt. Having discovered a worm, it becomes necessary to seize it and draw it up to the surface. It is obvious that the long, thin bill of a Snipe is very weak, and that it would not be possible to open it against the pressure of the surrounding soil, in order to grasp the worm. The Snipe, however, and some other Waders, possess the remarkable faculty of being able to raise the terminal portion of the upper mandible, without opening the whole bill. The two mandibles thus become a very serviceable pair of forceps. When a Snipe, therefore, finds a worm, the tip of the upper mandible is raised, and the worm seized and drawn out.

The tip of the upper mandible is raised by means of a pair of muscles attached to some of the bones of the jaw. If a freshly-killed Snipe, or a wounded bird, be taken, and its jaws slightly squeezed together, laterally, by a pressure of a finger and thumb, the tip of the upper mandible can be raised and closed as often as required, and the whole process of seizing a worm can thus be witnessed. The tip of the upper mandible can be raised about a quarter of an inch.*

The Snipes may be divided into three groups:—

WOOD-COCKS.—The sexes alike; the bill straight, the terminal portion pitted with small depressions; the marks on the crown of the head transverse; the primaries marked with notches of rufous; the bill much longer than the tarsus.

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* For a fuller explanation of this singular formation of the Snipe's bill, the reader is referred to an interesting paper on the subject by Mr. W. P. Pycraft, in the *Ibis* (1893, p. 361).

TRUE SNIPES.—The sexes alike; the bill straight, the terminal portion pitted with small depressions; primaries plain; the bill much longer than the tarsus.

PAINTED SNIPES.—The sexes dissimilar; the bill curved near the tip, the terminal portion smooth, not pitted with small depressions; primaries much variegated with bars and spots; the bill about equal to the tarsus.

126. THE WOOD-COCK.

Scolopax rusticula (LINNÆUS).

Bill straight; the terminal half pitted.
Primaries notched with rufous on the margins of both webs.
With cross-bars on the hinder part of the crown.
Tail-feathers soft and broad, black, with the tips, on the under side, silvery white.

Sexes alike.

VERNACULAR NAMES:—*Sim-titar*, *Tutatar*, Hind.; *Chinjarol*, Chamba; *Sham-titar*, *Sham-kukra*, Kumaon; *Kangtruk*, Manipur; *Wilati-chaha*, Chittagong.

THE Wood-Cock is a summer resident on the Himalayas, at or above 10,000 feet elevation, from Kashmir to Assam. In winter this bird descends to the lower valleys of the Himalayas, and spreads itself over the entire Empire and Ceylon. It probably, however, does not reach the Andamans and Nicobars. With this exception, there are few tracts from which this species has not been recorded. It is commoner in the hills than in the plains, but it is found everywhere at times, almost down to the level of the sea in Burma, and probably also in other Provinces.

The Wood-Cock is widely distributed throughout Europe and Asia, breeding as far north as the Arctic circle in Norway and Sweden, and up to about the 60th degree of latitude in Asia. In the winter it is found as far south as the Mediterranean, Persia, India, Burma and China. This species is a permanent resident in many parts of the world, particularly on certain ranges of mountains, and it is also found all the year round in the Azores, the Canaries and Madeira.

The Wood-Cock is erratic in its migrations, and in many portions of the Empire is only a chance visitor, which may be met with at any time in the cold weather. In the parts which they regularly visit, they may be looked for in November. They return north in March. As suggested by Messrs. Hume and Marshall, it is probable that all the Wood-Cocks that visit the plains of India are natives of the Himalayas, for the reason that all Indian-killed birds are persistently smaller and lighter than the birds of Central and Northern Asia or those of Europe.

During the day the Wood-Cock is to be found in woods and bush-jungle, where it lies quiet and concealed. Under ordinary conditions it feeds entirely at night, and then frequents the margins of streams and pools where the ground is soft. By preference, no doubt, this bird chooses running water, but it seems to be very often satisfied to feed near ditches, ponds, and swamps. For instance, Captain Williamson found these birds fairly abundant near Toungoo, on the margins of jhils, and from the holes in the mud made by the bill, it was obvious that they had been feeding there.

The Wood-Cock is generally found singly or in pairs, although a good number of birds may sometimes be found not far distant from each other. In India, it is said to be very tame and confiding, being unwilling to rise, and, when on the wing, only flying a few yards before settling again. This is very different from the flight of a Wood-Cock in Europe, where this bird often rises in such a manner as to afford a most difficult shot.

Except at the time of "rôding," referred to further on, the Wood-Cock is a silent bird. It feeds by preference on worms, for which it probes the mud with its long, sensitive bill, but it is also partial to beetles and other insects. Their feeding-grounds can generally be detected at once by some well-known signs, either holes bored in the mud, or some other peculiarity. Thus, Mr. Cordeaux remarks:—" Woodcocks evince a great partiality for some favourite plantation or spot in a cover; they are also very partial to oak-woods; and their presence may be detected by examining the ground under the trees, as in their search for food they turn over the dead leaves, laying them with great regularity, but the other side up."

The little pointed feather of the Wood-Cock's wing, so much in request amongst painters, is the outermost primary covert, and lies at the root of the first large primary. This feather is about one inch long, narrow, stiff, pointed, and differently coloured to the other primary coverts. It is brown, with pale indentations on both webs, and a whitish tip. The other primary coverts are black indented with chestnut.

In spring, the Wood-Cock has a curious habit, which is thus described by Seebohm:—" The Woodcock does not drum like the Snipe ; but, during the breeding-season, like that bird, the male forgets for a time his skulking habits, and flies backwards and forwards, uttering a peculiar note, which, though unquestionably proceeding from the throat, must be regarded as analogous to the drumming of the Snipe. This peculiar habit of the Woodcock is described as 'rôding,' and is indulged in early in the morning and late in the evening in the pairing-season, sometimes before it reaches its breeding-grounds, but more often after its arrival there. This 'rôding' continues for about a quarter of an hour, during which two peculiar notes are uttered, sometimes singly, and sometimes one following the other."

In Sweden, the Wood-Cock is shot while "rôding," and Mr. Ekström, as quoted by Mr. Dresser, remarks :—" During the first days of spring the Woodcock commences 'rôding' the instant the sun has sunk below the horizon, but at a more advanced period somewhat before its final disappearance, and continues until nightfall. In the morning it begins 'rôding' whilst still quite dark, and ceases previous to its being full daylight. When the bird 'rôdes' there is always an interval between each *tour* and *retour*, which is more observable in the evening, when it goes and returns three several times. The first time it always flies high, and generally with rapidity; the second, its flight is but little above the tree-tops, and commonly slower; the third time still nearer the ground, and yet more leisurely; but it is then, especially in early spring, too dark to take proper aim. One ought, therefore, always to fire when it makes its appearance for the second time."

When flying about in this extraordinary manner, the plumage is puffed out and the flight is rather slow.

The Wood-Cock has another peculiar habit. The female, and probably the male also, carry the young birds about, one by one, either to remove them from danger, or to take them to neighbouring feeding-grounds. The young bird is grasped between the thighs, and is further held in position by the pressure of the bill of the parent bird and by the feet.

Professor H. Littledale witnessed an instance of this habit of the Wood-Cock in Chamba. He says :—"To my delight, up flew a woodcock about five yards from me. She had a young one—the men said two young ones, but I could not see two distinctly myself—in her claws pressed close under her ; and she flew slowly and heavily for about ten yards, then rested above a bramble which the young one seemed to catch hold of with its claws, or become entangled in. The old bird fluttered for quite half a minute over it before she could pull the little one clear and fly a few yards further down, when she alighted, but rose again when I sent a man to try to catch the young one."

The Wood-Cock probably breeds throughout the Himalayas at considerable altitudes. The account of the finding of a nest of this species by the late Mr. A. Anderson in Kumaon is no doubt well known to all Indian sportsmen, and I need not reproduce it in full here. It was at an altitude of 10,000 feet, on July 2nd, that he found the nest and four eggs. These latter were deposited in a slight depression in the damp soil, and embedded amongst a number of wet leaves, the smaller ends of the eggs pointing inwards, and also downwards into the ground.

Many other Indian sportsmen have found the eggs of the Wood-Cock in the Himalayas, but I shall only quote the following interesting note by Mr. B. B. Osmaston, from the pages of the Bombay Natural History Society's Journal. He was in the Tons Valley, and he says:—

"On June 17th, as I was leaving their favourite haunts, I flushed a Woodcock in thick herbage at my feet, which only flew a few yards and then fell fluttering to the ground again. My heart beat fast, for I thought that at last I had certainly found the long-sought-for treasure; but no such luck, for I soon saw instead of eggs, three tiny chicks only a day or two old, quite unable to fly, but most clever at running and hiding themselves. I then turned my attention to their mother, who, all the time I had been inspecting her brood, had been going through the strangest of antics with outspread wings and tail, and making a continuous sort of grating, purring noise. She allowed me to approach within a few feet, and then, with an apparent effort, half-fluttered, half-ran away."

In Europe the Wood-Cock breeds as early as the commencement of March. The nest is generally placed on the outskirts of a wood, and invariably on the ground. The eggs are four in number.

The eggs of the Wood-Cock vary much

in shape. Some are pyriform, but the majority are short, broad ovals, very blunt at the smaller end. The ground-colour varies from greyish white to pale buff. The surface-markings, consisting of small blotches and spots, are sepia or yellowish brown, and the underlying markings are generally very large blotches of pale greyish brown or pale purple. Both sets of markings are more thickly disposed at the thick end of the egg than elsewhere, and form, in many cases, a well-marked cap. The shell has a fair amount of gloss. The eggs measure from 1·6 to 1·9 in length, and from 1·25 to 1·42 in breadth.

The plumage of the Wood-Cock is too varied to admit of any very minute description. The intensity of the markings vary a good deal according to age and season.

The forehead and front part of the crown are ashy, generally plain, but sometimes mottled. A black band connects the eye and the base of the bill. The hinder part of the crown is black, crossed by two or three narrow rufous bars. The back is largely blotched with black and mottled with rufous. The scapulars and the long inner secondaries are barred and otherwise marked with black, rufous and ashy. The rump and the upper tail-coverts are rufous, very irregularly barred with black. The tail-feathers are black, indented at the margins with rufous, and broadly tipped with ashy grey above and silvery white below. The upper wing-coverts are firmly barred with black and deep rufous. The first primary has the outer web very distinctly margined with creamy white, and there are a few fulvous marks between this margin and the web. The inner web is brown, with a series of small pale rufous notches on the margin. The other primaries and all the short outer secondaries are brown, with very distinct triangular rufous notches on the outer web, and somewhat similar but paler notches or short bars on the margin of the inner web. The chin is white. The throat and the cheeks are whitish with interrupted black bars. The whole lower plumage is pale rufous, very regularly cross-barred with black. The under tail-coverts have these bars more or less diagonal, and have, in addition, an arrow-head-shaped black spot near the tip. The under wing-coverts and axillaries are very firmly barred with pale rufous and black.

The young bird differs from the fully adult in several respects, but only two are very noticeable and need be referred to here. In the young the outer web of the first primary has no pale margin, and is as plainly marked with rufous notches as the outer web of the other primaries. The marks on the margins of the tail-feathers, instead of being notches as in the adult, are more of the nature of bars and reach almost to the web.

Indian birds are rather smaller than European ones. The sexes do not differ much, if at all, in size. Length about 14; wing about 7·5; tail 3; bill, from gape, varying up to 3·3. The bill is dark brown, paler at the base of the lower mandible; the irides are brown; the legs and feet are grey or plumbeous. Weight usually not exceeding 12 oz. in Indian, but reaching to 16 oz. in European birds. Tail of twelve ordinary feathers.

127. THE WOOD-SNIPE.

Gallinago nemoricola (HODGSON).

Primaries plain.
Tip of the first secondary quill falling beyond the tips of the primary coverts by about three-quarters of an inch.
Outer web of the first primary entirely brown, like the inner web.
Outer tail-feathers narrow and stiff.

Sexes alike.

VERNACULAR NAMES:—*Ban-chaha*, Nepal.

THE Wood-Snipe is restricted, so far as is at present known, to the Indian Empire. In the summer, it is found in the Himalayas from Dalhousie and the Ravi river on the west to Sikhim on the east, at elevations ranging from 6,000 to 10,000 feet. It seems improbable, however, that Sikhim should be its eastern limit; and this Snipe will, no doubt, be hereafter discovered in summer on the Himalayas in Bhutan and Assam.

In winter this species finds its way

south to all the hill ranges of the peninsula and even to Ceylon, and on migration it is met with on the plains. Its western limit is altogether unknown; but I conjecture that it will prove to be roughly a line drawn from Dalhousie to Baroda.

This Snipe is probably commoner in the eastern portion of the Empire than in the Indian peninsula itself. It has been obtained in the Dibrugarh district of Assam, in the Garo and Khasi hills, and in Manipur. Both Mr. A. E. English and Captain J. Donovan procured numerous specimens at Maymyo, to the east of Mandalay. Major G. Rippon informs me that this species has been shot at Toungyi and at Bampone in the Southern Shan States, and Lieut. J. H. Whitehead writes to me that he has shot it at Kengtung. The late Mr. W. Davison observed this Snipe at the extreme southern end of Tenasserim.

The Wood-Snipe leaves the Himalayas, on migration south, about the end of October; but from the fact that this Snipe has been observed in the Khasi hills and in Manipur in September, it is extremely probable that it may be a constant resident in some of the numerous hill-ranges of the Indo-Burmese countries or the Shan States. The shape of the wing indicates it to be a poor flyer, and that the days of its migrations are numbered. I cannot find any note regarding the date on which this bird leaves the plains. In fact, this Snipe is everywhere so uncommon that very little is really known about its habits.

The Wood-Snipe is found in swampy places near the edge of the jungle, often solitary, sometimes in small companies, as mentioned by Captain Baldwin. It rises with a croaking note, flies slowly, and affords a very easy shot. It is probably a nocturnal feeder, and during the day it appears to retire to some quiet shelter, under a bush or tuft of grass, near water. As the result of the examination of the contents of the stomach of several of these Snipes, Mr. Hume is of opinion that they do not feed as much on worms as do the Wood-Cocks. Their food appears to consist more of insects of various kinds. Captain Baldwin states that the Wood-Snipe is a most excellent bird for the table; but Mr. Ditmas, on the other hand, states that it is much inferior to the Pin-tail in flavour, and the meat coarser in texture. Of the habits of the Wood-Snipe during the breeding-season we know nothing.

Mr. Hume tells us that Mandelli's native shikaris took four clutches of the eggs of this species near Darjiling during the latter part of June, and he adds that Mandelli gave him some of these eggs. In the course of writing the Catalogue of the Eggs contained in the Collection of the British Museum, I have carefully gone through all the eggs of the Snipes, and there are certainly no eggs of the Wood-Snipe to be found in the Hume Collection.

On the other hand, although Mr. Hume omits all mention of the Solitary Snipe from his "Nests and Eggs," and states in the "Game Birds" that he has never seen the eggs of that species, there are, nevertheless, three eggs of the Solitary Snipe in the Hume Collection, one of which is marked "869. Gallinago solitaria, Native Sikhim, 18.6.79." These eggs agree exactly with other eggs of the Solitary Snipe from Western China, taken by Mr. A. E. Pratt, and undoubtedly authentic.

Under these circumstances I am inclined to think that Mandelli's reputed eggs of the Wood-Snipe were afterwards discovered to be the eggs of the Solitary Snipe, possibly by the identification of a skin, or by some information subsequently received.

The account of the breeding of the Wood-Snipe contained in "Nests and Eggs" and the "Game Birds" must, therefore, be viewed with doubt, and I do not quote it.

The Wood-Snipe has the forehead and the crown of the head deep black, with an indistinct pale buff longitudinal streak down the middle of the crown. There is a broad whitish band from the bill, passing over the eye; below this a broad black band connecting the eye with the bill. The chin is white. The throat and sides of the head are whitish with blackish spots and streaks, and a black band covers a part of the cheeks. The neck all round is buff, blotched with black. The back is black. The inner scapulars are black, with a broad buff margin to the outer web. The outer and longer scapulars are barred and tipped with buff. The upper part of the rump is dark brown, barred with dull white; the lower part, and the upper tail-coverts, dull rufous barred with brown, and the outer feathers of the coverts tipped with white. The broad median tail-feathers are black, terminated with chestnut, a wavy black bar and a whitish tip. The lateral feathers are ashy, barred with brown and tipped whitish. The lesser and median upper wing-coverts are irregularly barred with dark brown and buff. The greater and primary coverts are dark brown, tipped with white. The primaries and the outer secondaries are plain, dark brown, with slightly paler tips. The inner long secondaries are barred with black and dull chestnut. The chest and breast are fulvous, mottled with black; the sides of the body are fulvous, barred with black; the abdomen and thighs are dull white barred with brown; the under tail-coverts are barred with brown, fulvous, and white. The axillaries are ashy brown, obliquely barred with white; the under wing-coverts are regularly barred with ashy brown and white.

The sexes do not differ much in size. Length about 12; wing 5½; tail about 2; bill about 2½. The bill is brown, darker on the terminal third of its length; the irides are brown; the legs are plumbeous or greenish. Weight usually up to a little more than 6 oz.* There are eighteen tail-feathers, of which the six middle ones are soft and broad, and six on each side, stiffer and gradually diminishing in width and length, the outermost feather being about one-tenth of an inch wide.

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* Mr. J. W. Ditmas states that a Snipe of this species, shot by him in the Wynaad, weighed 8½ oz.

128. THE SOLITARY SNIPE.

Gallinago solitaria (HODGSON).

Primaries plain.
Tip of the first secondary quill reaching closely to the tips of the primary coverts.
Outer web of the first three primaries, and the tips of all the primaries, distinctly margined with white.
Outer tail-feathers narrow and stiff.

Sexes alike.

VERNACULAR NAMES :—None known.

THE Solitary Snipe inhabits the Himalayas from Kashmir to Assam, being found in summer at elevations ranging from 9000 to about 15,000 feet. In the winter it descends to the valleys, below 6000 feet, and to the plains in the immediate vicinity of these. At this season it has been observed also on the Garo and Khasi hills and at the head of the Assam valley, and a specimen was met with near Benares by Mr. A. Guthrie in September.

Mr. F. W. F. Fletcher, of the Rockwood

Estate, Nellakotta, Nilgiris, was fortunate enough to shoot this species recently in Southern India, thus extending its range most unexpectedly. In the *Asian* of February 8th, 1898, he wrote:—"Some little time back, when shooting near Devala, S.-E. Wynaad, with Mr. W. Hamilton, we bagged a good specimen of the Himalayan Solitary Snipe (*Gallinago solitaria*). I say 'we' advisedly, as the prize was only discovered amongst our bag after the day's shoot was over, and I do not therefore know to whose gun it fell."

The Solitary Snipe, which has been divided into several subspecies without any good grounds, occurs in Eastern Siberia, Japan, China, and a considerable portion of Central Asia, as far as Western Turkestan. It appears to be chiefly a vertical migrant, changing elevation according to season and making short excursions into the neighbouring plains. It breeds in the mountains of Western China, and there is no reason why this species should not be found commonly in parts of Upper Burma and the Shan States.

Dr. Scully says:—"The Solitary Snipe is not uncommon in the valley of Nepal from October to the beginning of March, being represented in larger numbers than either the Woodcock or Wood Snipe. It is found at the foot of the hills all round the valley, on sloping grass-covered ground, in the nullahs or small streamlets running down from the hills. It is as often found in pairs as singly, and does not seem ever to seek the shelter of bushes or forests. Its flight is slower and heavier than that of either the Pintail or Common Snipe."

Except the above, little has been written about the habits of the Solitary Snipe, since the issue of Messrs. Hume and Marshall's "Game Birds." I therefore shall quote largely from this excellent work. Mr. Hume, relating his experiences, writes:—"They do not seem to care much for cover. I have constantly seen them along the margins of little streams, in bare rocky ravines and valleys, where there were only small corners and nooks of turf and mossy swamp, and no cover a foot high. I have no doubt found them in small open swamps in the middle of jungle, but they stick to the grass and low rushes, and I never myself observed them in scrub or ringal jungle. I have known Wood-Snipe and the Eastern Solitary

Snipe flushed within a short distance of each other; but, as a rule, the Wood-Snipe is to be seen only in tiny swamps or morasses, partly or wholly surrounded by thick cover—the Solitary Snipe in little swampy places on open grassy hill sides, or along the margins of rocky-bedded, bare-banked streams.

"The Solitary Snipe has a much higher range in summer, and does not go nearly so far south in winter.* In the Himalayas at all seasons it is at least ten times as numerous as the Wood-Snipe. It is just as commonly met with in twos and threes as singly, whereas (in the hills at any rate) the Wood-Snipe is always solitary.

"The flight of the Wood-Snipe, and the shape of its bill, are 'wood-cocky,' of the Solitary Snipe, both are 'snipey.'

"The latter rises, flies, twists, and pitches precisely like a Pintail Snipe, but is somewhat less rapid and agile in all its movemovements than this, and *à fortiori* than the Common Snipe.

"The Wood-Snipe, so far as my experience goes, rises invariably silently; the Solitary Snipe goes off with a loud 'pwich'

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* This statement is *now*, however, hardly accurate. Both species occur in Southern India.

—a harsh screeching imitation of the note of the Common Snipe.

"They feed, to judge from those I have examined, chiefly on small insects and tiny grubs. I have found a mass of minute black *coleoptera* in the stomachs of two or three; of one I find noted 'minute shells' There is always a quantity of gravel or coarse sand in the gizzard.

"They are excellent eating, but not I think quite equal to any of the other Snipes, the best of which are certainly the Jacks. There is not much on these latter, but what there is, is delicious.

"The breeding season commences in May, when the males are to be often heard and seen in the higher portions of the hills, soaring to a considerable height, repeatedly uttering a loud, sharp, jerky call, and then descending rapidly with quivering wings and outspread tail, producing a harsh buzzing sound something like, but shriller and louder than, that produced by the Common Snipe, and this though they do not descend as rapidly as this latter."

In treating of the Wood-Snipe, I have explained what seems to me to have been a mistake made in the identification of the eggs of a Snipe taken by Mandelli's men in Native Sikhim in June. These eggs are referred to the Wood-Snipe by Mr. Hume in the note he gave me for the second edition of the "Nests and Eggs," and also in the "Game Birds"; but one of the three eggs in the Hume Collection is marked as being that of the Solitary Snipe, and all three eggs agree exactly with five other eggs of the latter species, taken by Mr. A. E. Pratt in the pine-forests above Ta-chien-lu in Western Sze-chuen.

The eggs of this Snipe are very distinct from the eggs of the other Snipes, so far as they are known to me. The ground-colour is pinkish buff. The surface-markings consist of very large blotches and some small spots and specks of rich reddish or chocolate-brown. These are most frequent on the larger half of the egg, where they are often confluent and form a large cap. The underlying blotches and spots are dull purple. The eggs are much pointed at one end and rounded at the other, and have little or no gloss. They measure from 1·7 to 1·8 in length and from 1·25 to 1·3 in breadth.

The Solitary Snipe has the upper plumage delicately marked and cross-barred throughout, the pale markings being white or nearly so; and there are none of the large black patches on the back and scapulars which characterise the Wood-Snipe.

The forehead and crown are dark brown, mottled with rufous, and with an interrupted whitish band down the middle of the latter. There is a broad brown band connecting the eye and the bill, and above this, on either side of the forehead, a whitish band running from the upper mandible backwards to the eye. The whole upper plumage, and the lesser and median upper wing-coverts are very beautifully barred with black or brown, chestnut, and whitish, the scapulars having a broad whitish margin to the outer web. The upper tail-coverts are rufous grey, the tip of the longer feathers cross-barred. The middle eight tail-feathers are black, terminated with chestnut, a wavy black bar, and a whitish tip. The remaining narrower feathers are white, with broad black bars. The greater upper wing-coverts are brown, margined with white at the tip. The primaries and the outer secondaries are dark brown, conspicuously margined with white at the tip; the first three primaries with the margin of the outer web also white. The inner secondaries are richly barred with black and chestnut, and notched with white on the outer web. The chin is white. The sides of the head and the throat are white, streaked with brown. The foreneck and chest are wood-brown, the feathers edged with white. The remainder of the under surface is white, barred with brown on the sides of the body and breast. The abdomen is white, and the under tail-coverts only slightly barred. The axillaries are diagonally barred with white and dark brown. The under wing-coverts are regularly and very distinctly barred with dark brown and white.

In young birds, the outer secondaries are freckled with rufous near the tip, the frecklings sometimes extending to the inner primaries. The outer web of the first primary is more or less freckled between the web and the white margin.

The sexes are of much the same size. Length about 12½; wing about 6¼; tail 2½; bill about 2½. The bill is yellowish brown, with the terminal third black; the irides are dark brown; the legs and feet are olive or greenish. Weight up to 8 oz. The number of tail-feathers varies considerably, and is said to be as many as twenty-eight in some birds. Usually the tail-feathers are eighteen in number; the eight in the middle being broad, soft, and of the usual character; the lateral ones narrow, short and stiff, the outermost feather being about one-tenth of an inch in breadth.

129. THE COMMON SNIPE.

Gallinago gallinago (LINNÆUS).

Primaries plain.
Tip of the first secondary quill reaching closely to the tips of the primary coverts.
Outer web of the first primary white.
With white margins to the tips of the outer secondaries, one-tenth of an inch, or more, in width.
With a longitudinal pale band on the crown.
All the tail-feathers soft and broad.

Sexes alike.

VERNACULAR NAMES:—*Chaha*, Hind.; *Bharka*, *Bharak*, Nepal; *Chegga*, *Khada-Kuchi*, Bengal; *Tibud*, *Panlawa*, Mahrati; *Mor-ulan*, *Ulan*, Tamil; *Muku-puredi*, Telugu; *Kœswatuwa*, Ceylon; *Kada-Kecho*, Orissa; *Cherayga*, Assam; *Check lonbi*, Manipur; *Myaywoot*, *Snite*, Burmese.

THE Common or Fan-tail Snipe occurs as a winter visitor in every portion of the Empire, including Ceylon, the Andamans, and the Nicobars. It is very unequal in its distribution. Roughly speaking, it is the commonest Snipe in the peninsula of India, from the Himalayas down to the Godavari river. Elsewhere in the peninsula, and throughout the eastern portion of the Empire, it is far less common than the Pin-tail Snipe. But exceptions to this general statement occur. In some parts of Upper Burma, and at certain times, the Common Snipe is predominant, and some bags are composed entirely of this species. Sometimes the bags are composed of equal quantities of the two Snipes. In Lower Burma the Pintail is undoubtedly the commoner species at all times. In Tenasserim the Common Snipe becomes very rare. At the extreme east of the Empire, Lieut. J. H. Whitehead informs me that the Snipes killed at Kengtung are mostly Pin-tails, from which I gather that the Common Snipe also occurs in that locality, but less commonly.

Outside our limits, the Common Snipe has a very wide range, being found in summer throughout Northern Europe and Asia up to about the 70th degree of latitude, and breeding as far south as the Alps, Southern Russia, Turkestan, and the Himalayas. In winter this species is found over a considerable portion of Northern Africa, in Arabia, Persia, India, and the Malayan countries as far as the Philippine Islands.

Many Snipes of this species appear to summer in the Himalayas, or are perhaps resident there, coming down to lower elevations in the winter, but there is no precise information on this point.

Although the Common Snipe has been shot in India as early as the third week of August, it does not usually arrive in considerable quantities till the commencement of September. Most of these birds return north in March, but in some favourable localities a few birds remain on till April or May or even, very occasionally, till June.

The winter habits of the Common Snipe in India are so well known, or can be so easily investigated, that I do not propose to say much about them. The young sportsman will find that, in the course of a week's shooting, he will learn nearly all that there is to learn about Snipes and their ways in India.

The distribution of the Common Snipe is determined chiefly by the nature of the ground. The extremely sensitive bill of this bird points to the fact that it finds its food *in* the ground not *on* it. Consequently the Common Snipe is found only where the ground is soft. It will also be found that this Snipe prefers open country and avoids jungle, and it is therefore almost invariably found on large bare marshes or in extensive plains of paddy-fields. When these dry up, the Common Snipe moves to other marshes. A night's rain may bring them back again.

The Pin-tail is much less dependent on ground and rain-fall. Its bill is much harder and less sensitive, showing that it does not depend so much on touch for finding its food. It is perhaps as fond of soft ground as the Common Snipe; but when the ground dries up it does not move to any great extent, but is content to take up its quarters in some adjoining grass-land, where it is able to subsist on insects that are found on vegetation or on the surface of the ground. It will be noticed that the Pin-tail wanders about much less than the Common Snipe.

A Snipe cannot stand in more than two inches of water, nor can it probe for worms in ground which is at all submerged. Consequently certain wet fields, although presenting the same general appearance from day to day, may at times attract Snipes in large numbers, and at other times, owing to a slight increase of water, be quite unsuitable for them.

The habits of the Common Snipe in summer may be observed in Kashmir, but no Indian sportsman has hitherto written about them at that season, and, consequently, we must consult European writers.

A curious habit of the Common Snipe, chiefly, if not entirely, practised at the breeding season, is that of perching on trees, fences, etc. Messrs. Seebohm and Harvie-Brown write:—"We were not a little surprised when we first became acquainted with the arboreal habits of the Snipe at Habariki, and saw one of those birds perched, seventy feet from the ground, on the topmost upright twig of a bare larch, where, one would have thought, it could scarcely find sufficieut foot-hold. With its head lower than its body and tail, it sat there, uttering at intervals the curious double 'clucking' note, *tjick-tjuck*, *tjick-tjuck*, whilst others of the same species were 'drumming' high in air over the marsh. To put it all beyond a doubt, Harvie-Brown shot one in this peculiar position."

Another habit of this Snipe, and one which, in a modified form, seems common to all the Snipes, is that of "drumming" or "bleating" at the breeding season. One sound produced by the Snipe is undoubtedly vocal, the other is produced by the action of the wings or tail, or of both combined. Opinions are much divided with regard to the mode in which these sounds are produced, and many theories have been propounded. Of all the accounts I have read, the one which seems to me to be the most complete in all respects has been given us by Mr. F. Boyes, of Beverley, in the *Field* of the 9th July, 1898. I reproduce it in full. Mr. Boyes writes :—

"In the correspondence which has taken place in your columns respecting the 'drumming' of the snipe, it has appeared to me that your contributors have confused the vocal notes of the bird with that most peculiar sound which it makes by the aid of its tail and wings. What is known to naturalists as the 'drumming' or 'bleating' of the snipe is that sound which the bird makes when on the wing and whilst it is descending rapidly and obliquely through the air. Let me describe the 'drumming' of the snipe. We enter the marsh, and before we have gone very far we become conscious of a series of clicking sounds like *jick-juck*, *jick-juck*, *jick-juck*, rapidly repeated, which apparently proceed from some creature on the ground. We follow these up, and as we draw near, what should rise just in front of us but a veritable common snipe, which, after flying some distance, rises up in the air uttering the same peculiar notes which first attracted our attention. As we watch it rising upward it is repeating these vocal notes all the time, but after attaining a sufficient altitude it suddenly turns, and with wings shaking or trembling, and tail widely spread, the feathers of which seem to be turned somewhat sideways and are distinctly seen to be vibrating, the bird shoots rapidly and obliquely downwards for some distance, and it is then—whilst it is making this sudden swoop—that the peculiar sound called 'drumming' is heard. Those who have heard this peculiar sound in the distance, say, on a still summer's evening, with the birds in the sky invisible, may well be excused for likening the sounds to the bleating of a lamb on some distant upland. That the sound is produced by the vibration of the feathers in their rapid passage through the air is unquestionable, for a similar sound can be produced by striking a boy's thin wooden sword rapidly downward, the resistance of the air causing it to vibrate and give out a peculiar sound similar in tone to that of the bird; and those who have spent much time in the marshes must have heard at one time or another the wind playing through the broad-leaved sedges, and, catching a leaf at a particular angle, make it produce a sound of a like character. I need scarcely say the 'drumming' is never produced except when the bird is on the wing and descending, but the vocal sounds, *tinka*, *tinka*, *tinka*, are often uttered whilst the bird is sitting on the ground or on a post or sod wall. One correspondent states he has never been able to make out whether both cock and hen birds make the 'drumming,' but he fancies it is only the cock bird. I am not aware that any naturalist has stated that the hen bird 'drums' as well as the male, but I think I can settle this point in the affirmative, for one day I visited a very small strip of bog, and almost immediately rose the cock bird, which commenced to 'drum' above and around me in a short time. I flushed the hen off her nest of three eggs, and as she left it she dropped the fourth egg, which broke in its fall, and the bird, continuing its flight, struck itself against some posts and rails, and fell stunned to the ground, but soon recovered and flew away. I marked it, and afterwards went and put it up. All this time the male was 'drumming' overhead, and no other snipes were in the neighbourhood. The female now joined in the 'drumming' and the two were 'drumming' for some time, and then they both alighted on the tops of posts, and allowed me to walk quite near them, nodding their heads at me all the while. In this instance, at any rate, I think there can be no doubt whatever that both male and female were 'drumming,' as I walked the small strip of bog out over and over again without flushing another snipe."

The Common Snipe breeds in Kashmir, but the eggs have not been taken by any competent observer, and there are no eggs of this species in the Hume Collection with the exception of three taken at Yarkand. The late Mr. Brooks, however, satisfied himself that the Common Snipe bred in Kashmir, and we can have no better authority for the statement.

In Europe the Common Snipe begins to nest in the middle of April, but in Kashmir apparently not till May. The nest is a depression in the ground, lined with a little grass, and is usually placed near a swamp amongst rushes or high grass. The eggs are almost always four in number, and placed, like the eggs of all the Waders, with the points towards the centre of the nest. The eggs are sharply pyriform, and are only slightly glossy. The ground-colour varies a good deal: from pale greenish to buff or brownish olive of various shades. The surface-markings are large spots and blotches of dark brown or chocolate-brown, usually more dense at the larger end of the egg than elsewhere, where they are often confluent. The underlying markings are purplish grey. A large number of eggs measure from 1·5 to 1·72 in length, and from 1·05 to 1·2 in breadth.

Several instances are recorded of the breeding of this or the Pin-tail Snipe in the plains or hill-ranges of the Empire, as indicated by the capture, as I understand, of young Snipes recently hatched. I have had no opportunity of examining any of these young birds; nor do the eggs ever appear to have been found.

The general colour of the upper plumage of the Common Snipe is black and buff, evenly distributed, and not in large patches, as in the Wood-Snipe. The forehead and crown of the head are black, sometimes mottled with buff. A broad buff band runs from the bill down the middle of the crown. A black band connects the eye with the bill, and above this there is a buff band. The chin is whitish. The sides of the head are pale buff, mottled with brown. The sides of the neck and the hindneck are buff, streaked with brown. The back is black, the long, lateral, pointed feathers* very broadly margined with buff on the outer web, these margins forming two very conspicuous broad bands down the sides of the back. The scapulars are black, margined and irregularly barred with rufous buff. The lower part of the back is brown, the feathers tipped with white. The rump and the upper tail-coverts are barred with pale chestnut and black. The tail-feathers are black with the terminal portion chestnut mottled with black. Each feather has a pale tip and an irregular black bar in front of it. The outer tail-feathers are more or less white barred with black. The lesser and median upper wing-coverts are brown, tipped and margined with pale buff or dull white. The greater coverts are brown conspicuously tipped with white. The outer web of the first primary is white; the inner web is brown. The other primaries are brown with a very narrow white tip. The outer secondaries are brown with a broad white tip. The inner secondaries are irregularly barred with black and pale chestnut. The foreneck and breast are dull buff, streaked with brown. The sides of the body are barred with brown. The abdomen and the thighs are pure white; the under tail-coverts are buff, irregularly marked with black. The axillaries are white, rather obliquely barred with black; and the under wing-coverts are white irregularly banded with black, except on the central portion, which is plain white.

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* Many writers state that the two broad buff bands on the back of a Snipe, so characteristic of these birds, are formed by the margins of the outer scapulars. This is quite incorrect. The bands are formed by the margins of certain long, pointed feathers, which spring from either side of the upper back. The outer scapulars are margined with buff in a much smaller degree.

In this species the sexes do not vary much in size. Length up to 12½; wing about 5¼; tail 2¼; bill about 2¾. The bill is greenish brown for two-thirds of its length from the base, then horny brown; the irides are brown; the legs and feet are brownish green. Weight up to rather more than 4¼ oz. The tail-feathers are fourteen in number (occasionally sixteen), and all of them are of the ordinary kind, soft and broad, the laterals not narrowed nor stiff.

Allied to the Common Snipe is the Great, or Double, Snipe (*Gallinago major*), which is not unlikely to be found to occur within our limits as a chance visitor. In this species, the three outer feathers of the tail, on either side, are narrower than the others, being about three-tenths of an inch in width. They are pure white, with just one or two small black bars at the base of the outer web. The larger upper wing-coverts are tipped with white. This Snipe is rather larger than the Common Snipe. These characters should suffice for the separation of this species from all other Indian Snipes.

130. THE PIN-TAIL SNIPE.

Gallinago stenura (KUHL).

Primaries plain.
Tip of the first secondary quill reaching closely to the tips of the primary coverts.
Outer web of the first primary brown, like the inner web.
White margins to the tips of the secondaries never wider than the thickness of a small pin, or altogether absent.
With a longitudinal pale band on the crown.
Outer tail-feathers narrow and stiff.

Sexes alike.

VERNACULAR NAMES :—The same as those used for the Common Snipe.

THE Pin-tail Snipe is found, during the winter, over nearly every portion of the Empire, including Ceylon, the Andamans and Nicobars, except in the North-west. From all that I can gather, it would appear that a line drawn from the head of the Gulf of Cutch to the western part of Garhwal, in the Himalayas, represents the limit of the distribution of this Snipe. West of this line it is absent or extremely uncommon; east of this line it is more or less common and met with in varying quantities. In the peninsula of India this Snipe is less abundant as a rule than the Common Snipe; in the eastern part of the Empire the reverse is the case. As remarked in the account of the Common Snipe, the Pin-tail is found at Kengtung in the Shan States, where probably Swinhoe's Snipe will also be found.

The Pin-tail is found in summer over the eastern part of Asia up to the Arctic Circle, and from the Yenesei river to the Pacific Ocean. In winter it visits India, Burma, China and the islands of the Malay Archipelago.

The Pin-tail arrives in India and Burma about the middle of August, and by the end of that month it is quite common. In November the numbers of this Snipe are reduced (I am speaking of Lower Burma), probably by the migration of some of the birds farther south. In January, owing to the drying up of the land, no large numbers of this Snipe are to be met with, and by February few birds are left. Single specimens may, however, be shot here and there up to the commencement of May.

Except in the matter of food and choice of feeding-grounds, this and the Common Snipe do not differ much in habits. It is true that the two birds are said to have quite distinct notes on being flushed, and that the flight of the Pin-tail is said to be heavier and more direct than that of the Common Snipe, but opinions on even these common matters of observation are considerably divided. Personally I have been unable to distinguish between the two species when alive.

It is curious how, when the hot weather comes on in Burma, the Pin-tail will frequently be found lying up in grass far from any water, and on ground which is baked hard. At such times, I believe, the birds are only sleeping or resting, but it is nevertheless remarkable that such hot, dry spots should be chosen for the purpose.

Large bags of Snipe, chiefly consisting of Pin-tails, are commonly made in Lower Burma. The largest number brought to bag, that has come to my knowledge, is one hundred and seven couple and a half by one gun, some few miles north of Rangoon. In the Shan States, seventy one couples have been obtained by one gun near Fort Stedman, and very large bags are sometimes made in the Kyouksè District in Upper Burma, where the rice-fields are under constant irrigation during the dry weather.

The late Mr. H. Seebohm observed this Snipe in summer, and writing in the *Ibis*, said :—" The first Wader which arrived at our winter quarters on the Arctic Circle was the Pin-tailed Snipe. We shot a couple on the 5th of June, three days after the ice began to break up on the great river. Three days later they were exceedingly common on the oases of bare grass which the sun had been able to make in a few favourable situations in the midst of the otherwise universal desert of melting snow. I could easily have shot a score a day if I had had cartridges to spare. They used to come wheeling round, uttering a loud and rather shrill cry (some idea of which may be gathered by the sound of the word *peezh*, long drawn out) ; then they used to drop down with a great whirr of wings, and with tail outspread—an operation which seemed so engrossing that they appeared seldom to discover, until they were on the ground, that they had chosen a spot to alight within twenty yards of a man with a gun. It was amusing to see them find out their mistake. Sometimes as soon as they caught my eye they would take wing and fly quietly away; but more often they would hurry off as fast as their legs would carry them, and hide behind a tuft of grass or a bush. I never heard the Pin-tailed Snipe 'drum,' as the Common Snipe often does, when wheeling round and round at a considerable height in the air; nor did I ever hear the *tyik-tyuk* so characteristic of the Common Snipe. I think the Pin-tailed Snipe is much easier to shoot than our bird. The flight seems to me slower and less zigzag."

Perhaps Mr. Seebohm was too early in such high northern latitudes to witness the peculiar habits of this Snipe at the breeding season. They are thus described by Colonel Prjevalsky, who refers to this Snipe under the name of *G. heterocerca.* He says:—"It breeds in tolerable numbers on the Ussuri, but is still more plentiful during migration, about the 10th of April and in the end of August.

"In the latter half of April the birds choose their nesting-localities in the thinly overgrown marshes, and their peculiar courting commences. Rising into the air, similar to our *G. scolopacina*, and describing large circles above the spot where the female is sitting, it suddenly dashes downwards with great noise (which is most likely produced by the tail-feathers, like that made by our species, and somewhat resembles the noise of a broken rocket). As the bird approaches the ground the noise increases, until it has got within a hundred yards, when it suddenly stops the sound and quietly flies on, uttering a note something like *tiric*, *tiric*, *tiric*. Courtship lasts until the middle of June, and is mostly heard or seen in the mornings and evenings, but occasionally in the daytime, and even at night in the clear weather."

The eggs of this Snipe have not been described, and it is doubtful if they have ever been taken by any naturalist. The extracts above quoted were written some twenty years ago, and I believe that, since that time, no further light has been thrown on the breeding of this Snipe.

The Pin-tail Snipe has the plumage so similar to that of the Common Snipe that it is unnecessary to describe it separately. The points of difference between the two species may be thus summarised :—

Common Snipe.—The outer web of the first primary white ; the outer secondaries tipped with white to the extent of one-tenth of an inch, and frequently more; the under wing-coverts irregularly barred, and with a central patch wholly white; the outer tail-feathers soft and not much narrower than the others ; the bill about 2·75 in length from the forehead to the tip.

Pin-tail Snipe.—The outer web of the first primary brown like the inner ; the outer secondaries with very narrow white tips or none at all, never broader than the thickness of an ordinary small pin ; the under wing-coverts very regularly barred throughout, without any plain white central patch ; the outer tail-feathers extremely narrow and stiff, the outermost being about one-twentieth of an inch wide near the tip ; the bill generally less than, and seldom exceeding, 2·5 in length, from the forehead to the tip.

With the exception of the bill, the dimensions of the two species are much alike, except that the total length varies of course in the same way as the bill.

The tail-feathers when complete are twenty-six in number. Of these eight, or even ten, may be termed soft and broad. The others rapidly narrow and become stiff, the outermost feathers resembling a stout pin.

The bill of the Common Snipe, in addition to being longer, is also much broader near the tip and covered with more numerous pits than in that of the Pin-tail Snipe.

The weight of the two species is much the same, but the Pin-tail, according to Messrs. Hume and Marshall, is, on the average, a trifle lighter than the Common Snipe.

Allied to the Pin-tail Snipe is Swinhoe's Snipe (*G. megala*), which extends, according to season, from Siberia to the Malay Archipelago, and is extremely likely to be met with in Burma and the Shan States. It differs from the Pin-tail only in the structure of its tail, which has twenty feathers instead of twenty-six. But the tails of Snipes are very often imperfect, and the process of counting the number of feathers in the tail tedious; so that it will be sufficient for the purpose of discriminating the two species to notice that, whereas in the Pin-tail Snipe the outermost tail-feather is no thicker than a stout pin, and those next to it of much the same character; in Swinhoe's Snipe the outermost tail-feather is from ·1 to ·15 of an inch wide, and that those next to it gradually increase in width till the sixth feather from the outside is one-quarter of an inch in width.

131. THE JACK-SNIPE.

Limnocryptes gallinula (LINNÆUS).

Primaries plain.
Tip of the first secondary quill extending beyond the tips of the primary coverts by about one-quarter of an inch.
Basal half of the outer web of the first primary whitish.
Outer secondaries with the tips of both webs obliquely cut to a sharp point.
Tail-feathers of the ordinary kind, though rather narrow and pointed; the middle pair one-quarter of an inch longer than the next pair.
No longitudinal pale band on the crown.
Axillaries white, slightly mottled with brown, never barred.

Sexes alike.

VERNACULAR NAMES :—It is very doubtful whether any native names apply specially to this Snipe.

THE Jack-Snipe is found over the whole peninsula of India, from the Himalayas to the extreme south, and also in Ceylon. It has not yet been obtained in the Andamans and Nicobars, and probably does not occur in those islands. To the east, it ranges from Assam down to Pegu and to the latitude of Moulmein, but I cannot discover that it has ever been shot in the Shan States.

The Jack-Snipe is a winter visitor to the Indian Empire, arriving in some parts as early as the end of August, and it does not leave certain suitable localities till April.

This Snipe, in summer, is found in Northern Europe and Asia up to, and within, the Arctic circle, from the Atlantic to the Pacific Oceans. In winter, it migrates to the British Isles, Central and Southern Europe, Northern Africa, Palestine, Persia, India, Burma, and China.

Jack-Snipes are irregularly distributed over the Empire, and nowhere do they occur in such large numbers as the Common and Pin-tail Snipes, except very late in the season, when, as recorded by Messrs. Hume and Marshall, they sometimes out-number the other Snipes in Upper India.

The Jack-Snipe in winter is, on the whole, a solitary creature, and it is seldom that any considerable number of these birds will be shot in the course of one day's shooting. In Upper Burma, where the Jack is fairly common, six may occasionally be bagged in one day.

This Snipe is fond of quiet spots and corners, where some concealment is afforded by bushes and grass. Although, like other Snipes, this bird habitually feeds at night, it also feeds a good deal in the morning and evening. Its bill is very sensitive, and no doubt its chief food is worms, and consequently it is found on ground which is moist and soft. It lies very close and frequently refuses to rise. Its flight is feebler than that of the Common Snipe, but it is of the same zigzag nature. It flies no great distance as a rule, and is in the habit of dropping suddenly. After alighting, it squats, and is very easy to mark down. It seldom utters a note.

I shall now quote Mr. Booth, who, in his "Rough Notes" has some interesting remarks on the Jack-Snipe. He says:—"During the long protracted and bitter frost of that terrible winter [1855], I was handed over to a keeper in my father's service to be initiated into the art of shooting Jack-Snipes—'broken in,' as the old man termed it. As the plan he followed was decidedly effective and, to the best of my knowledge, original, it may not be out of place to devote a few lines to a description of his mode of tuition. A Jack-Snipe, my instructor truly argued, was almost invariably missed through firing too quickly, both barrels being usually discharged before the bird is five-and-twenty yards from the muzzle of the gun. This error was expressly pointed out, and I was forced to repeat aloud 'One, two, three, four, five, six,' after the Snipe rose on the wing, before bringing the gun to the shoulder. The first lesson being duly impressed on my mind, the antiquated muzzle-loader was placed in my hands and practice next attempted. . . . It is hard on thirty years since I profited by these lessons; but even now the well-remembered 'One, two, three,' etc., frequently rises to my lips when the inevitable Jack appears, and ill-luck invariably attends the bird that is patiently waited for.

"The Jack, unlike its larger relative the 'Whole' Snipe, is seldom wild and unapproachable. I never met with them gathered into flocks, flying and settling in company after the manner of those birds. Ten or a dozen up to even forty or fifty may frequently be found scattered over a small space; but on rising on wing the company break up and separate. . . .

"The difficulty of finding and putting up these strange birds is well known to all sportsmen; without a steady dog accustomed to their habits, large numbers must invariably be passed over. Jacks may frequently be detected squatting on the moist ground, the attention usually being attracted by the eye or the yellow stripes on the back. On one occasion, while cautiously making my way across a waving bog, over which my weight was causing the water to rise rapidly to a depth of three or four inches, I noticed three floated off the short herbage and rushes on which they were squatted and swept down to my feet by the force of the current before they attempted to take wing, one of the birds being carried by the rush of the water a distance of three or four yards. The poor little fellow made no attempt to swim, the legs being kept perfectly still, and the head remaining drawn back between the shoulders, with the beak pointed forwards, in the position into which they subside when danger approaches."

Colonel Hawker gives the following directions regarding Jack-Snipes :—"To kill *jack*-snipes, a pointer that will stand them is the greatest possible acquisition, as they always lie so very close that you are liable to walk past them. These little snipes are easiest killed in a light breeze, or even calm weather, as in a gale of wind they fly more like butterflies than birds. Nothing teases a poking shot worse than jack-snipes ; but to one who has the knack of pitching and firing his gun in one motion, they are, generally speaking, not much worse to shoot than other small birds, except in boisterous weather.

"The jack-snipes are the best eating of all the tribe. . . . As with pheasants, the *hen* is the best for the table, the *cock* the prettiest bird for a present."*

Wolley's account of the nidification of the Jack-Snipe, as quoted by Hewitson, still continues the best, and in fact the only one. The eggs of this Snipe, in the British Museum Collection, fifteen in number, are all from Lapland and Finland, and most of them were taken by Wolley. He says:—"I scarcely like to tell you about the Jack-Snipe, anything I can say must be so poor an expression of my exultation at the finding of this long-wished-for egg. It was on the 17th of June, 1853, in the great marsh of Muonioniska, that I first heard the Jack-Snipe, though at the time I could not at all guess what it was; an extraordinary sound, unlike anything I had ever heard before, I could not tell from what direction it came, and it filled me with a curious surprise; my Finnish interpreter thought it was a Capercally, and at that time I could not contradict him, but soon I found that it was a small bird gliding at a wild pace at a great height over the marsh. I know not how better to describe the noise than by likening it to the cantering of a horse in the distance, over a hard, hollow road; it came in fours, with a similar cadence, and like a clear yet hollow sound. The same day we found a nest which seemed to be of a kind unknown to me. The next morning I went to Karto Uoma with a good strength of beaters. I kept them, as well as I could, in a line,—myself in the middle, my Swedish travelling companion on one side, and the Finn talker on the other. Whenever a bird was put off its eggs, the man who saw it was to pass on the word, and the whole line was to stand whilst I went to examine the eggs and take them at once, or observe the bearings of the spot for another visit, as might be necessary. We had not been many hours in the marsh, when I saw a bird get up, and I marked it down. . . . The nest was found. . . . A sight of the eggs as they lay untouched raised my expectations to the highest pitch. I went to the spot where I had marked the bird, put it up again, and again saw it, after a short low flight, drop suddenly into cover. Once more it rose a few feet from where it had settled. I fired; and in a minute had in my hand a true Jack-Snipe, the undoubted parent of the nest of eggs! . . . In the course of the day and night I found three more nests, and examined the birds of each. . . .

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* I do not know how Colonel Hawker distinguished the cock from the hen of this species. The plumage of the two sexes is quite the same.

"The nest of the 17th, and the four of the 18th June, were all alike in structure, made loosely of little pieces of grass and equisetum not at all woven together, with a few old leaves of the dwarf birch, placed in a dry sedgy or grassy spot close to more open swamp. . . . It was not long after I heard it that I ascertained that the remarkable hammering noise in the air was made by the Jack-Snipe."

The eggs of the Jack-Snipe are very large for the size of the bird, more so than in the case of the other birds of this group. In colour and shape, they resemble the eggs of the Common Snipe. They measure from 1·45 to 1·65 in length and from 1·05 to 1·13 in breadth.

In the adult bird, the forehead and the crown are black, mottled with rufous. There is no central pale band down the middle of the crown, but this latter is bounded on either side by a very distinct buff band, extending from the upper mandible to the back of the head. A shorter black band runs between the buff band and the eye. A broad black band connects the bill and the eye; below this there is a pale fulvous streak extending from the bill to the ear-coverts, and below this again another black band ends in a large black patch behind the ear-coverts. The sides of the head, where not covered by the bands above mentioned, and the whole of the sides of the neck, are dull white streaked with black. The hindneck and the upper part of the mantle are rufous grey, mottled with black and white. The middle of the back is black glossed with purple, the long feathers on the sides of the back black glossed with green, the outer webs of all the feathers rich buff, forming two broad stripes for the whole length of the body. The scapulars are black glossed with green, margined and irregularly barred with rufous buff. The lower back and the rump are black, many of the feathers with narrow white margins. The upper tail-coverts and the tail-feathers are black with broad buff margins, and some of the former have the whole outer web buff. The lesser and median upper wing-coverts are black, margined with pale rufous. The greater coverts and the primary coverts are black with whitish tips. The primaries are black with very narrow white tips, the base of the outer web of the first dull whitish. The outer secondaries are black with broad white tips, the ends of the two webs of each feather obliquely cut and forming a point. The long inner secondaries are richly marked with black and buff.

The throat is dull white, mottled with brown. The foreneck, the breast and the sides of the body are dull rufous, streaked with brown. The whole abdomen is white, and the under tail-coverts are white with brown shaft-streaks. The axillaries are white with a few brown mottlings, and the under wing-coverts are white, very irregularly barred with brown.

Length about 8½; wing 4¼; tail 2; bill 1½. The bill is horn-colour, becoming black towards the tip; the irides are brown; the legs and toes are pale olive-green. Weight up to 3¼ oz., according to Mr. Booth; but the heaviest bird recorded by Messrs. Hume and Marshall only weighed 2½ oz. The tail is composed of twelve ordinary soft feathers, which, however, are rather narrow and pointed.

132. THE PAINTED SNIPE.

Rostratuia capensis (LINNÆUS).

Bill curved downwards towards the tip.

Bill, tarsus and middle toe about equal in length.

Primaries variegated with bluish grey, black and buff.

MALE:—With no white scapular feathers.

FEMALE:—At all ages with some narrow, pointed, white scapular feathers, partially concealed.

VERNACULAR NAMES:—*Ohari*, Nepal; *Kone*, *Konchatta*, Kol. (Singhbhoom), *Baggarji*, Bengal; *Tibud*, *Pan-lawa*, Mahr. (Ratnagiri); *Mail-ulan*, Tamil; *Rajakœswatuwa*, Ceylon.

THE Painted Snipe occurs in every portion of the Indian Empire, except perhaps in some parts of the Himalayas. It extends, however, to Kashmir. This species is also found in Ceylon, but it has not yet been recorded from the Andamans or Nicobars.

This Snipe appears to be only a rainy-season visitor to the drier parts of Central, North-western and Northern India, but elsewhere it seems to be a permanent resident, moving about a good deal, of course, in search of suitable feeding-grounds.

In the eastern part of the Empire the Painted Snipe is very unequally distributed. Major G. Rippon, referring to Upper Burma, informs me that he considers it more abundant there than in India, but in Lower Burma it is far from common, and south of Moulmein it appears to be extremely rare. It ranges far away to the east, however, for Lieut. J. H. Whitehead informs me that he has obtained this bird at Kengtung.

The present species is found over a large portion of Africa and in Madagascar. It has been observed in Asia Minor and Afghanistan. Thence it extends, through India and Burma, to China and Japan, the Malay peninsula and the Malayan islands, as far as the Philippine group.

The Painted Snipe is generally found on marshy ground, which is covered with abundance of grass or other low cover, and it will seldom be seen on bare land. The bill of this Snipe is not sensitive, and is moreover curved, so that it is not able to probe the soil for worms as ordinary Snipes do. Its food, therefore, consists chiefly of insects, and perhaps vegetable matter, and its flesh is very inferior for the table.

Painted Snipes are usually found in couples or small groups. They are tame and confiding, and allow a near approach before rising on the wing. The flight is slow and heavy. This Snipe, as a rule, flies but a short distance and settles quickly. It is not easy to flush it a second time.

A curious habit of this Snipe, common perhaps both to the male and female, may be often observed at the breeding season and also, according to Blyth, when the bird is surprised. It consists in the display of its beautiful plumage, the wings and tail being spread out to their full extent, the breast pressed to the ground and the bill raised.

The late Mr. J. Wood-Mason has pointed out that the windpipe of the male of this species is formed differently to that of the female, the consequence being that the two sexes utter very different notes. The note of the female has been described as a "low, regular, hoarse, but rich, purring call," and again as a "low, mellow, single soft note," frequently repeated. The male utters a sharp squeak at irregular intervals.

The Painted Snipe breeds at various periods of the year, according to climate and locality. I cannot do better than quote what Mr. Hume has written on this subject. He says: "Reviewing the evidence now available, I should say broadly that the majority bred once during the height of the rains and once during the middle of the cold season; but practically in one place or another this species has been found breeding in almost every month in the year; and while I have no doubt that they have two broods a year, I think it possible that, under favourable conditions, they may have more."

The nest is a pad of grass or rushes, some six inches in diameter, placed on the ground. The eggs are four in number. They are generally oval in shape, sometimes rather pointed at one end or pyriform. They have comparatively little gloss. In colour they are buff, thickly blotched, spotted and streaked with deep black. These marks are frequently confluent, and cover about half the surface of the egg. The shell-marks, which are faint and indistinct, are purplish grey. The eggs are comparatively small for the size of the bird and measure from 1·29 to 1·5 in length, and from ·89 to 1·05 in breadth.

The male has a broad buff band extending from the forehead over the middle of the crown to the back of the head. On either side of this band there is another, black mottled with white; and another band again, dark brown. The eye is surrounded by a buff ring, which is continued back as a band over the ear-coverts. The whole hindneck is ashy brown, barred with black, the feathers very narrowly tipped with white. The mantle and back are similar, but with the black bars fewer in number and much broader, and the pale tips more conspicuous; the outer feathers of the back broadly margined with buff on the outer web. The scapulars are ashy brown, blotched with black and narrowly tipped with white. The rump is bluish grey, barred with narrow black lines and slightly mottled with white. The upper tail-coverts are bluish grey, barred with black, and some of the feathers with large, double spots of buff. The tail-feathers are bluish grey with narrow wavy black bars, and broad buff bands. The upper wing-coverts are bluish grey, but this colour is in many places almost obliterated by large buff spots and patches, which are bordered above by a black bar. The primaries are bluish grey, marbled with black and white on the inner web, and marked with black blotches and round buff spots on the outer web. The outer secondaries are similar, but the black on the outer webs is confined to the base of the quills. The inner secondaries are olive-brown, much marked with black. The sides of the head and the throat are white streaked with brown; the chin nearly entirely white. The foreneck is brown, mottled with white and bounded below by a black gorget. The lower surface, from the gorget to the tail, is pure white. The sides of the breast are olive-brown, marked with black and white, and separated from the black gorget by a white band. The axillaries are white, the tips of the longer ones barred with ashy. The under wing-coverts are bluish grey, barred with black; the central feathers plain white.

The adult female differs from the male in the following respects:—The circle round the eye and the band over the ear-coverts are white. The upper wing-coverts and the long inner secondaries, in fact the whole aspect of the closed wing, is olive-green, with a russet tinge, closely barred across with black. A band under the eye is black. The sides of the face, the throat, the upper part of the foreneck and a broad collar round the neck are pale chestnut. The lower foreneck and the upper part of the mantle are plain black, and the patch on the sides of the breast are nearly uniform black. The chief difference, however, lies in the female having the outermost scapular feathers very narrow, pointed, and pure white.

The young birds of both sexes resemble the male in plumage, *but the females may be known at all ages by the presence of some white scapular feathers.* Females in every phase of plumage between that of the male and that of the adult female are very common in collections. The plumage of the male hardly varies at all from youth to old age.

In this species the female is rather larger than the male. The length of the male is about 10; wing about 5; tail about 1½; bill about 1¾. The bill and legs are olive-brown; the irides are brown. The bill is subject to considerable variation in colour. Weight up to about 6½ oz. The tail is composed of fourteen ordinary feathers.

APPENDIX.

Since the issue of Part I. of this work, two additional species of Pheasant have been observed within the limits of the Indian Empire. One of these is an undescribed Silver-Pheasant, the other is a well-known Chinese Pheasant of great beauty. The first I shall term—

72a. WICKHAM'S SILVER-PHEASANT.

Gennæus wickhami, n. sp.

MALE :—The mantle, back, and the visible portions of the closed wings black, finely, but irregularly, vermiculated and speckled with pale buff; the feathers of the rump and the upper tail-coverts plain black, without vermiculations, but very broadly fringed with white.

FEMALE :—Not known.

Vernacular Names :—*Yit*, Burmese.

A male of this species was sent me by my friend Mr. P. F. Wickham, last year, from the Chin-Hills in Burma. He writes:—"The bird I send was shot at Minken, about ten miles south of Falam, and at an elevation of about 5000 feet; this I should say was the limit of height to which this Pheasant extends, and I have not seen them, or heard of them, in the higher thickly-wooded peaks where the Tragopans live. I have shot them generally in nullahs where the jungle is thick but with Chin clearings near at hand. I have seen them myself perch in trees when put up by dogs; but they are persistent runners, although when once put up, they fly a long way before settling again."

When describing the Chin-Hills Silver-Pheasant in the first part of this manual, I expressed an opinion that that species would prove to be the Silver-Pheasant of the whole of the Chin-Hills. This, however, is not the case. We now see that there is one species which inhabits the valley of the Chindwin river, and another the heights of the Chin-Hills. It will probably be many years before anything is known accurately about the distribution of the two species.

Wickham's Silver-Pheasant may be distinguished from all other Silver-Pheasants by the characters given above. It only remains to be added that the forehead, crown and crest, as well as the whole lower plumage, is glossy black. The hindneck is vermiculated like the mantle. The tail-feathers are black, the middle pair freckled with buffish white on both webs, the others on the outer web only.

Length of male about 24; wing 9½; tail 11. The skin of the face is crimson.

The second species to be brought to notice is

61A. LADY AMHERST'S PHEASANT.

Chrysolophus amherstiæ, (LEADBEATER).

THIS fine Pheasant is found in the mountains of Western China and Eastern Tibet. Quite recently a male specimen of this species was obtained on the Burmo-Chinese frontier by one of the officers attached to the Boundary Delimitation Commission. This bird was forwarded to Mr. Rowland Ward, who sent it to the Museum of Natural History for inspection, and thus it came to my knowledge. I understand that it was shot on the frontier, either in the Myitkyina or the Bhamo District.

The male of this species is a wonderful creature, and requires but little description. The crown of the head is glossy green, mottled with red, and the long pointed crest is of a bright chestnut-red. A large mantle or cape of broad feathers springs from the back of the head, under the crest, and covers the sides and back of the neck. These feathers are white, margined with black at the ends, and the longer feathers are quite five inches in length. The back and scapulars are deep bronze, all the feathers with a black margin. The primaries are pale brown margined with white; the outer secondaries black; the inner secondaries and all the upper wing-coverts purple. The rump and the upper tail-coverts are buff, the bases of all the feathers black but more or less concealed; the tail-coverts are tipped with orange-red. The tail-feathers vary from white to hair-brown, and are much barred in various ways with black. Four feathers of the tail-coverts on each side are much lengthened and might be mistaken for lateral tail-feathers. They are tipped, for a distance varying from one to three inches with orange-red. The chest is bronze-green with crescent-shaped black tips, and the lower plumage is white. Length about 50; wing rather more than 8; tail about 36; tail-feathers 18 in number. The bare skin about the eye is blue.

The female is a brown bird, and bears a close general resemblance to the females of many other species of Pheasants. The tail of eighteen feathers distinguishes the female of this species from the Barred-Backed Pheasants and all others which have sixteen tail-feathers. There remains Stone's Pheasant, which occurs in the same locality. From the female of this, the female Lady Amherst's Pheasant may be distinguished at once by the coarse black and buff cross-bars which cover the mantle, the back, the scapulars, the upper wing-coverts, the inner secondaries, and the whole lower plumage except the middle of the abdomen; and by the much longer tail, measuring about fourteen inches. The tail, as in the True Pheasants, is straight, pointed, and much graduated.

Seeing that Lady Amherst's Pheasant has now been found on the Burmese frontier, there is no reason why the Golden Pheasant (*Chrysolophus pictus*) should not also occur within our limits. The male has the crest of pointed feathers, about four inches in length, the lower back, the rump and the upper tail-coverts golden-yellow. The mantle or cape is orange, barred with black. The feathers of the upper back are dark green, edged with black. The scapulars are crimson, and there is a good deal of chestnut on the wings. Nearly the whole lower plumage is crimson. Some of the upper tail-coverts are lengthened and crimson. Length about 40; wing nearly 8; tail about 27.

It will probably be difficult to distinguish the female Golden Pheasant from the female Lady Amherst's Pheasant. The females of both species are much alike, but they are badly represented in the British Museum, and the few specimens available have, for the most part, been bred in captivity, and may not, therefore, be quite the same as wild birds. If the sportsman should be fortunate enough to get a hen pheasant of this group (with eighteen tail-feathers and nearly the entire plumage cross-barred with black and buff) he is recommended to preserve the skin and to send it to the British Museum for identification.

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